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HONG KONG

DIRECTOR OF AGRICULTURE FISHERIES AND FORESTRY

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ANNUAL DEPARTMENTAL REPORT

BY THE

DIRECTOR

OF

AGRICULTURE, FISHERIES & FORESTRY

FOR THE

FINANCIAL YEAR 1956 - 57

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APPENDIX 1—Statistical Information and Tabulated Data.

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APPENDIX 3—Comparison of Hull Forms of Two Purse Seiners.

Note:—The weights and measures used in this report are:—

4.8 mows ..... = 1 acre
6 dou chung ..... = 1 acre
1 picul ..... = 133 lbs.
1 catty ..... = 1.33 lbs.
1 tael ..... = 1.33 oz.

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PART 1

ADMINISTRATION AND GENERAL

Policy.

THE Department of Agriculture, Fisheries & Forestry comprises four divisions of Agriculture, Animal Industries, Fisheries & Forestry. It is in fact a department concerned with the development of food production and the preservation and conservation of the means of production. In close co-operation with the District Administration it is vitally concerned with the welfare of some 400,000 people comprising the farmers and fishermen of the Colony and generally through the activities of the Forestry Division it is playing an important and increasing part in the development of domestic water supply and amenity plantings.

2. The work of the divisions and the services rendered under approved policy are presented in detail in the appropriate sections of this report. It is proposed here to survey briefly the industries which are served by the department and the progress made in the period under review. Likewise reference will be made to important departmental developments and services of general importance to farmers and fishermen.

Weather Conditions.

3. The total rainfall for the year amounted to 1,710 m.m. which is 732.9 m.m. less than the rainfall recorded last year. Drought conditions during the first quarter of the year delayed the transplanting of paddy in some districts. More favourable conditions during the second crop paddy period resulted in a good crop being harvested. The absence of frost and typhoons and a long spell of cool to cold weather from December to March enabled farmers to plant European kinds of vegetables. Excellent crops of cabbages, cauliflowers, carrots, tomatoes, beetroot and lettuce were grown and harvesting continued well into April.

4. Meteorological data of interest to agriculture, summarized from records of the Royal Observatory, are set out in Appendix 1(A).

5. Dry weather which prevailed up to the end of April delayed forestry plantings. Fortunately, however, there was intermittent rain throughout May, June and July without dry periods so that the survival in the new plantations formed during those months was better than usual. Less replanting of the current years plantations was necessary and it was possible to plant a bigger area than had been expected.

6. The weather generally was not kind to the fishermen. The new "Strong Monsoon" signal (introduced by the Royal Observatory as from the 1st April, 1956) was hoisted frequently during the first and last quarters. Between July and September, inclusive, ten typhoons were reported and, although these all passed well clear of the Colony, the threat of these typhoons caused fishermen to stay in harbour. As usual, there was either too much wind for the small craft or not enough for the larger sailing junks.

7. A large mechanized junk long liner went aground on the rocks near Sam Mun Kwan, in the fog, during February. The vessel was shattered by heavy seas and ten lives were lost. Two other accidents occurred at about the same time but, fortunately, there was no loss of life.

PRODUCTION — SURVEY OF INDUSTRIES

A. AGRICULTURE.

Paddy.

8. It was not a good year for paddy farmers and again the need for adequate water storage and efficient irrigation systems is emphasized. Fortunately much useful work is in progress and much more is being planned. The construction of two small impounding reservoirs for farmers at Lo Fu Hang and Hung Shui Hang and was nearing completion at the close of the financial year. An analysis of paddy production is set out in Appendix 1(C)(D). In all 442,152 piculs (26,748 metric tons) of paddy were harvested yielding on a 68% milling figure

18,188.44 metric tons of rice. A comparison of rice production over the past five seasons is set out as under:—

TABLE 1

Season	Production (piculs)	Average price (per picul)	Money value of crop (approx.)
		$	$
1952	505,553	60.50	30,285,000
1953	589,823	45.00	26,538,000
1954	429,780	36.25	15,579,000
1955	464,013	40.50	18,752,000
1956	442,152	40.00	17,686,000

The drop in production is due entirely to poor seasons and not to any falling off in area planted up to this crop. Apart from the 1952 season when the average price was over $60 per picul, prices have fluctuated between $40 - $45 per picul. Under normal conditions exemplified by the 1953 season at an average price of $40 per picul the money value of the paddy crop approximates $23,500,000. A drop of some $6,000,000 in a bad season is a serious matter to the rice farmers of the New Territories.

Vegetables.

9. Local production of vegetables reached the new high level of 1,272,965 piculs as compared with 1,195,883 piculs for the previous year. Details are set out at Appendix 1(E). The total value of locally grown vegetables was $22,056,718 as compared with $20,000,438 for the previous year and exceeds in monetary value the rice crop for the season under review.

10. Industrial expansion has resulted in a considerable amount of agricultural land in the urban areas having to be given up for building sites, with the result that there has been a marked decrease in the quantities of vegetables produced from these areas.

11. The areas most affected are:—

Sha Tin	1,457.79	piculs less than last year
Tsuen Wan	6,837.16	„ „ „ „ „
Yuen Long	16,919.75	„ „ „ „ „
Castle Peak	12,912.84	„ „ „ „ „
Total	38,127.54	

12. On the other hand many of those who had to surrender the land they were cultivating in the urban areas have moved to the country and have either opened up hillside land or are squatting on existing paddy land. The principal areas into which this type of migration has taken place are:—

Sheung Shui ...	37,649.73	piculs more than last year
Fan Leng	29,965.35	„ „ „ „ „
Tai Po	13,792.35	„ „ „ „ „
Kam Tin	18,827.34	„ „ „ „ „
Total	100,234.77	

13. Records show an increased production of vegetables in these areas over last year's returns of 62,107.13 piculs. On the face of it, this would appear to be an admirable move, but there is the danger of an urban squatter problem being transferred from the town to the country.

14. The kinds of vegetables for which an increase in production is shown are:—

String Bean	1,326,577	catties
Taro	287,055	„
Tomato	410,001	„
Sweet Potato	774,510	„
Cucumber	1,010,979	„
Spinach	256,696	„

15. On the other hand, a marked decrease in the production of watercress was recorded. The figures are 191,044 catties less than last year.

16. The decrease in the production of this crop within the urban areas is a step in the right direction and will be welcomed by the health authorities.

Fruit.

17. Fruit growing in the Colony has been considerably extended. The main varieties produced are Wong Pei, local lemon, tangerine, Japanese Apricot, guava, papaya, lychee, pineapples and oranges. There is a steady demand for locally grown fruit.

18. Prices for locally grown fruit were as follows:—

TABLE 2

		$/picul.
1.	Japanese apricot	50 to 70
2.	Local lemon	40 „ 50
3.	Tangerine	70 „ 150
4.	Wongpei	70 „ 150
5.	Guava	30 „ 50
6.	Papaya (ripe)	40 „ 60
7.	Lychee	150 „ 500

The work undertaken by the Agricultural Division in extending fruit crops with financial assistance from the Kadoorie Agricultural Aid Association is recorded at Appendix 1(F). The local production is small at the present time but will continue to grow with the successful establishment of village orchards. Accurate statistics are not available but it is estimated that 46,300 piculs of assorted fruits were harvested during the year valued at about $1,810,000 for export and local consumption.

Export Crops.

19. (i) *Waterchestnut.* Approximately 166 acres were planted up to this crop as compared with 204 acres in the previous season. Yields were high and the quality of the nuts was good. The main bulk of the crop was processed and exported to the United States of America, where there is a limited market at fairly good prices.

20. (ii) *Japanese Apricot.* The growing of apricots planted in the village orchards has increased in popularity during the last few years. The reasons are early maturity, heavy yields, good prices for the fruit and the hardiness of young trees, which stand up well to local conditions of soil and weather.

21. (iii) *Local Lemon.* Lemons are grown for the local market and a great number of seedlings are raised each year as root stock for the grafting of scions of various citrus varieties, for establishment in village orchards.

22. (iv) *Taro, Bitter Cucumber, Yam & Arrowhead.* Although a greater quantity of taro, bitter cucumber, yams and arrowhead was exported this year, by far the greater part of this produce was consumed locally.

23. (v) *Lotus Seeds & Mushroom.* Small amounts of lotus seed and mushrooms are exported to the United States and the balance is consumed locally.

24. (vi) *Longan Fruit.* Fair quantities of Longans are grown, and a small quantity is exported to the Philippine Islands and to Vietnam.

25. (vii) *Lychee.* Good quality Lychees are grown. Most of the crop is sold on the local market and the balance exported (canned) to the United States of America.

26. (viii) *White Cucumber, White Cabbage, Ginger & Radish.* Besides the crops listed above white cucumbers, white cabbage, ginger and radish are grown for local consumption and export.

27. Details of crops exported are recorded in Table 3 and except where stated otherwise the export market is the United States of America.

TABLE 3

Crops Exported in 1956

	Kinds of crops.	*Amount issued. (catties)*	*Total yield checked. (catties)*	*Area planted D.C.*	*Remarks.*
1.	Waterchestnut	4,190,717	4,974,919	997.08	Slight increase
2.	White cucumber	117,645	441,560	151.26	Decrease
3.	Bitter cucumber	26,715	124,726	50.22	Increase
4.	White cabbage	178,900	278,354	92.28	Greatly decreased
5.	Taro	182,062	408,526	175.80	Increase
6.	Ginger	198,367	499,790	235.26	Greatly decreased
7.	Lotus root	164,960	297,468	62.34	Normal
8.	Yam	150,798	222,880	86.04	Increase
9.	Radish	63,113	383,511	135.66	Decrease
10.	Arrowhead	149,297	208,090	108.10	Increase
11.	Turnip (Tai Tau Tsoi) ..	336,637½	638,411	177.31	Normal
	,, (Jah Tsoi)	27,812			
12.	Lotus seed	29,730 hds.	29,800 hds.		
13.	Mushroom	2,499.25	6,045	19.50	
14.	Japanese apricot	64,895	199,569	4,891 trees	Greatly increased
15.	Wongpei	52,059½	132,048	3,222 ,,	Decrease
16.	Lemon	140,292½	140,938	8,907 ,,	Greatly increased
17.	Lychee	601,023	740,526	28,392 ,,	Decrease
		119,640			To Manila
18.	Longan	20,200	78,300		To Manila
		2,500			To Vietnam.

28. Although the quantities exported are small they provide an additional source of earning for the small farmer. The value of these exports was estimated at $2,885,000 and details are set out at Appendix 1(G).

B. Animal Industries.

29. The year 1956/57 has been a very good one for the livestock producers of the Colony and the livestock population continued to increase. A census of the livestock population was completed in November 1956 by the officers of the Animal Industries Division and is set out at Appendix 1(B). The general health of all animals and birds has improved considerably following improvements in the disease control organization of the Department. Better animal husbandry and more efficient disease control aided by the Kadoorie Agricultural Aid Association and the Kadoorie Agricultural (Loan) Fund has led to large increases in the breeding stock of the Colony and confidence in the industry. Much improved prices for animal products and reasonably priced animal feeding stuffs have also contributed to a successful year. Local production of sweet potatoes and vines for pig feeding amounted to 383,250 piculs on 1,825 acres valued at $6,132,000.

Pigs.

30. During the year 226,940 pigs of local origin were slaughtered in the local abbatoirs. This represents an increase of 57% over last year and amounts to 31% of the total pigs slaughtered in the Colony for food. It is interesting to record that in the same period the increase in the number of animals inoculated against swine fever was in excess of 63%.

31. The pigs kept in the Colony are the local Chinese breed comprising Fa Yuen, Wai Chau and a few Lung Kong types, exotic European breeds and crosses of both. Conditions of management vary from village type husbandry in which the animals forage freely to up-to-date modern scientific systems. Examples of all the intermediary steps between these extremes also flourish.

32. The price of pigs remained at $195 to $220 per picul live weight climbing to a maximum of $280 per picul in February 1957. Cross bred weaners fetched from $4 to $5 per catty and Chinese type weaners from $3 to $3.50 per catty. From slaughter house records the average weight of local pigs was 65 catties. This means at $1.95 per catty average price, the 226,940 pigs raised in the Colony earned $28,821,000 for local producers. This is a conservative figure; the real value is probably in excess of $30,000,000. The value of pigs raised

and consumed by the farming families of the Colony is estimated to be in excess of $10,000,000.

Cattle.

33. Local brown cattle and buffaloes are kept for work purposes but surplus stock is sold to butchers. There has been a noticeable increase in cattle numbers over the past three years despite limited grazing and the Chinese brown cattle appear to be ideally suited to the local environment and village management. During the year 4,568 beef animals raised in the Colony passed through local slaughter houses; about half of this number were slaughtered in the New Territories abbatoirs at Yuen Long and Tai Po. This represents a small proportion of the total cattle requirements of the Colony but an important additional source of income to New Territories farmers. From available records the average weight of local beasts was 260 catties on the hoof and the average price obtained was $2.20 per catty. The return from sales of local cattle was in excess of $2,612,000.

Milk.

34. The dairy cattle in the Colony consist mainly of Fresian but there are also Ayrshire, Jersey and Illawarra Shorthorns. These animals are concentrated in three areas—one large farm in Hong Kong, one large group of farms in the Diamond Hill area of Kowloon and one smaller group in the Tsuen Wan District of the New Territories. There is also a small private farm on Lantao Island maintained by the Trappist Monks. All these animals have passed the single comparative intradermal test for tuberculosis. They are stall fed with both concentrates and grasses (chiefly guinea) and are exercised in cattle courts. I am indebted to the managers of these dairies for their production figures which total 10,271,642 lbs. of milk and which at $0.80 per lb. gave them a gross return of $8,217,000.

Poultry.

35. The most popular breeds of poultry in the Colony are the white leghorns kept by specialized poultry farmers and the local Cantonese which are associated with practically every household in the New Territories and also with the specialized table bird producers some of whom maintain flocks of up to 40,000 birds.

36. These flocks are supplied chiefly by hatching eggs from the Chinese Mainland and are incubated in China for about 15 to 20 days and finished off in local hatcheries. The newly hatched birds are sold to poultry farmers as "day olds" at a normal price of 48 cents each and kept for 3½ to 5 months before disposal.

37. The dependence on Mainland supplies of hatching eggs is one of the limiting factors in a stable poultry industry; two other principal concerns are disease control and the price of imported feed. Disease control has been greatly improved and some assistance has been given by the department in the distribution of meat meal produced at Kennedy Town Abbatoirs and with loans from the Kadoorie Agricultural (Loan) Fund to purchase this concentrate. At annual meetings of the Poultry Breeders Association, officers of the department have emphasized the importance of organizing the collection of local eggs and the stimulation of local farmers to produce more eggs to offset shortages or manipulation of mainland supplies of hatching eggs.

38. During the year under review shortages occurred and in consequence the Poultry Breeders Association and Colony hatcheries took the forward step of organizing the collection of local eggs with the result that a new and important source of income has been created for home egg producers. Early in the year supplies of hatching eggs from mainland sources became scarce and by June had almost ceased. The price per egg rose from 48 cents to $1 and over. An active campaign of encouragement to small farmers and backyard keepers was instituted and in a period of 6 months by sound organization a very substantial contribution was made by local farmers. A new source of hatching eggs was found in Singapore but this was not very successful as the birds turned out to be a very poor "cross jungle fowl" and not acceptable as a table bird.

39. From hatchery records and other sources it is estimated that egg supplies were obtained as follows:—

Mainland China	3,500,000	eggs.
Local Farmers	2,000,000	„
Singapore	650,000	„
Total	6,150,000	„

Local farmers supplied 1 3 of the eggs that passed through the hatcheries but more important is the fact that the industry now has home "breeders" associated with it. By careful policy including favourable prices to farmers the industry will become less dependent on mainland sources. For stability in poultry raising this new industry should be encouraged.

40. Good prices per bird varied between $12 and $8 for caponized broilers (known as Chum Kai) and from $7 to $9 for pullets; medium quality caponized broilers realized $6.50 to $8 with pullets at $6 to $7. Poorer quality birds brought $5.50 to $7 for caponized broilers and $4.50 to $6 for pullets.

41. Reliable market records are not available to assess the value of this trade but a fairly accurate estimate can be arrived at from data available to the department on inoculation figures; the hatching percentage and the chick survival percentage. From a consideration of this data it is likely on a conservative estimate that 1,900,000 birds were marketed from 6,150,000 eggs. At an average price of $6 per bird of about 1⅓ catties the total returns from poultry raising was probably in excess of $11,400,000. There were 300 farms in the New Territories engaged in this business during the year. One of the largest of these establishments disclosed sales amounting to $930,000 during the year under review. Local farmers consumed an additional estimated 1,000,000 birds estimated at $6,000,000.

Ducks and Geese.

42. Ducks are raised in the wetter areas of the Colony and along the banks of streams for home consumption and export. The export trade in preserved ducks is in the hands of a few companies who maintain processing factories and enter into arrangements with local farmers who raise ducks for the factories. There is also a good home market for ducks. The export trade has declined during the year due mainly to the product not meeting the requirements of the food standards of the importing country. The raising of geese for the local market has expanded over the past 3 years. Reliable statistics on local sales are not available but a conservative estimate places the total in excess of $1,540,000. Details including figures for quail and pigeons are recorded at Appendix 1(H).

Quail.

43. There has been a marked decrease over the past two years in the number of quail kept in the Colony, due to a decline in the demand for quail eggs. Only 5 farms now keep quail on an appreciable scale as a side line to more lucrative activities. Local sales were in excess of $17,000.

Pigeons.

44. Pigeon keeping is now a thriving industry in the Colony and prices this year ranged up to $9 per pair for Squabs. One of the most popular types of table birds is the white or blue King crossed with the Homer. The sales of squabs at an average price of $9 per pair was in excess of $225,000.

C. FISHERIES.

Marine Fisheries.

45. The total quantity of fish landed was slightly more than during the previous year and, at the same time, the highest figure on record since the re-occupation of the Colony 1945.

46. Recorded below with the permission of the Director of Marketing are details of the quantity and value of fish sold through the Fish Marketing Organization. These figures include the controlled landings of foreign (Japanese) fish. Figures in respect of the immediately preceding year are included for comparison:—

TABLE 4

	Fresh Fish		Salt/Dried Fish		Total	
	Piculs (Tons)	Value $	Piculs (Tons)	Value $	Piculs (Tons)	Value $
April 1956 to March 1957...	608,058 (36,194)	43,288,947	88,788 (5,285)	4,521,485	696,846 (41,479)	47,810,432
April 1955 to March 1956...	572,194 (34,059)	33,350,140	89,968 (5,355)	3,854,090	662,162 (39,414)	37,204,230
Comparison with 1955/1956.	+35,864 (2,135) (+6.26%)	+9,938,807 (+29.8%)	−1,180 (70) (−1.32%)	+667,395 (+17.3%)	+34,684 (2,065) (+5.24%)	+10,606,202 (+28.53%)

47. The increased landings were mainly due to the good seasons enjoyed by a large number of mechanized junks, particu-

larly the junk trawlers and large long liners. The yields of Carangoid, Golden Thread, Melon Seed, Big Eyes and Anchovies were all considerably better than in the previous year. The analysis of landings is set out at Appendix 1(Q).

48. Fish prices during the two previous years (1954 55 and 1955/56) had been the lowest on record but, fortunately for the fishermen, these improved considerably during the year under review. The average price per picul for fresh fish increased from $58 to $71 (an increase of 22.4%) while that for salt dried fish went up from $43 to $51 (or 18.62%).

49. More detailed information concerning landings and fish prices is contained in the annual report of the Director of Marketing.

Minor Fisheries Products.

(i) *Pond Fish.*

50. The estimated total production from the New Territories fish ponds was 6,900 piculs (*i.e.* 410.7 tons) valued at HK$1,400,000.00. This works out at an overall average wholesale price (all species) of $202.80 per picul. Figures for the previous year (1955-56) were 4,950 piculs (294.6 tons) valued at HK$800,000.00. This was an overall average wholesale price of $161.60 per picul.

51. The reasons for this increase in production were:—

(*a*) A drastic reduction in the volume of living pond fish received from China. Imports decreased by some 30 - 50% (*i.e.* from some 700 to 800 piculs per day down to only 300 to 500 piculs daily). This naturally resulted in better prices being paid in Hong Kong for the locally reared fish, which in turn stimulated production.

(*b*) A good year generally in that there was adequate water available.

Fish Fry Trade.

52. Due to the difficulties in connexion with the obtaining of fry from China, Hong Kong dealers exported only 5,932,309 fry during the year (as compared with 23,397,683 in 1955-56 and 25,146,950 in 1954-55).

(ii) *Oysters.*

53. 1,596,302½ catties (*i.e.* 950.2 tons) of fresh oyster meat valued at HK$1,280,000 was harvested from the Deep Bay beds. (Figures for 1955-56 were 15,763.2 piculs (938.3 tons) valued at HK$1,300,000).

54. The 1,596,302½ catties harvested in 1956/57 was utilized as recorded in Table 5. It will be seen that this included, for the first time, a small consignment (300 catties) of fresh frozen oyster meat exported to the U.S.A.

TABLE 5

(1 picul = 133 lbs.; 16.8 piculs = 1 ton)

	Fresh Oyster Meat (piculs)			Dried Oysters (piculs)		Oyster Juice (piculs)	
	Local Consumption	Exported	For Processing	Local Consumption	Export	Local Consumption	Export
1/4/56 to 31/3/57.....	1,200	3	14,760	837	723	200	1,286
Total Production.	15,963 (950.2 tons)			1,560 (92.9 tons)		1,486 (88.5 tons)	
Approximate Value.....	H.K.$1,280,000						

55. In addition to the oyster produce, the Department was responsible for the certification of origin of a number of other marine products for export. Details were as follows: —

(iii) *Fresh Frozen Shrimp.*

56. 703,560½ catties (418.8 tons) valued at HK$1,604,150.21 (as against only 63,895¾ catties valued at HK$132,414.19 in 1955/56).

(iv) *Fresh Shrimp.*

57. For conversion into slices and noodles 11,000 catties (6.5 tons) valued at about HK$23,231.00 (as against 10,398 catties valued at HK$20,814.70 in 1955/56).

(v) *Silver Shrimp.*

58. For conversion into shrimp sauce and paste 40,255 catties (24 tons) valued at HK$13,953.41, plus 21,567½ catties (12.8 tons) valued at HK$7,462.36 which were exported to the

United Kingdom. The total was, therefore, 61,822½ catties worth HK$21,415.77 (as against 116,971 catties worth HK$42,555.87 in 1955/56).

(vi) *Spotted Fish.*

59. 37,238½ catties (22.2 tons) valued at HK$90,565.10 (as against 36,315 catties worth HK$83,770.53 in 1955 56).

(vii) *Cultured Pearls.*

60. A total of 4,100 blister pearls were cultivated at Kat O during the course of a commercial pilot scale experiment. These were sent to Japan for processing. They were said to have been worth HK$20,000.00, but this may well be an underestimate.

(viii) *Fan Mussel Fishery.*

61. In 1956/57 some 130 of these fishermen, working in the Tolo Harbour area, harvested about 98,240 (58.5 tons) of Fan Mussels valued at approximately HK$200,000.00. (No figures are available for the previous year, although the total landings and value were probably higher then).

D. Summary of Primary Production.

62. The value of our local food production and other primary products is set out in the following table:—

TABLE 6

Item	Value (nearest $1,000)	Remarks
Paddy	23,500,000	Value for normal year. $17,686,000 for 1956.
Vegetables	22,056,000	Exact records from Marketing Department.
„	4,410,000	Estimated value of N.T. consumption.
Fruit	1,242,000	36,300 piculs locally consumed.
Sweet potatoes	6,132,000	Estimated yield of 383,252 piculs at $16/picul.
Export Crops	2,885,000	Exported under certificates of origin. (includes fruit)
Pigs	28,821,000	Consumed in urban areas including N.T.
„	10,000,000	Consumed by 50,000 farming families. Estimate based on 4 weaners per family at $3/catty.
Cattle	2,612,000	Consumed in urban area including N.T.

TABLE 6—*Contd.*

Item	Value (nearest $1,000)	Remarks
Rice Straw	210,000	35,000 piculs sold to dairies and Jockey Club at $6/piculs.
Poultry	11,400,000	Consumed in urban area including N. T.
„	6,000,000	Consumed by 50,000 farming families in N.T.
		Estimate based on 20 birds/family/annum at $6/bird.
Hatching Eggs	1,000,000	Supply of 2,000,000 hatching eggs at 50c. each.
Ducks	614,000	Exported under certificate of origin.
„	681,000	Local consumption at unit price of $5.00.
Pigeon, Quail & Geese...	487,000	See Appendix VI, 1(H).
Fresh Milk	8,217,000	Hong Kong, Kowloon & N.T. Daireis — 10,271,642 lbs. at 80c. per lb. wholesale.
Marine Fisheries	47,810,000	Exact Records from Fish Marketing Organization.
„ „	4,781,000	Fish consumed by Fishermen estimated at 10% (stable diet).
„ „	11,952,000	Fish sold in China. Only 80% of catch landed in Hong Kong.
Minor Fisheries Products:		
(1) Pond Fish	1,400,000	6,900 piculs av. wholesale price $202.80/picul.
(2) Oyster & Oyster Sauce	1,280,000	See table 5 at page 13.
(3) Fresh Frozen Shrimps	1,604,000	418.8 tons or 703,560 catties.
(4) Fresh Shrimps ...	23,000	6.5 tons for conversion into slices & noodles.
(5) Silver Shrimps ...	21,000	61,822 catties exported to U. K. and U.S.A.
(6) Spotted Fish	91,000	37,238 catties or 22.2 tons.
(7) Fan Mussels	200,000	98,240 catties or 58.5 tons.
(8) Cultured Pearls ...	20,000	4,100 blister pearls — conservative estimate.
Camphor Wood	89,000	Sale of decayed and overmature camphor trees.
Total	199,538,000	

63. This productive effort (which is indeed a conservative estimate) of some $199,500,000 by the primary producers of the Colony from our small land mass and the surrounding seas is impressive. It is believed that the real effort is in excess of $200,000,000 but reliable statistics are not as yet available.

Apart from the direct contribution to the Colony's food supply our competitive effort assists in controlling the price of imported foodstuffs. It is interesting to record that livestock production leads at $69,832,000; Fisheries is next at $69,182,000 and agriculture third at $60,435,000.

FACTORS AFFECTING PRIMARY PRODUCTION

(i) *Adverse Weather.*

64. Reference has already been made to adverse weather conditions which delayed the planting of the first rice crop and the commencement of afforestation. Fortunately normal weather following the harvesting of the second rice crop led to optimum conditions for European vegetables and other catch crops which did not suffer as in previous years from frost damage. Some dislocation in fishing operations from typhoon weather has already been recorded but this is not reflected in fish landings.

(ii) *Plant Pests and Diseases.*

65. Damage by Rice Stem Borers (Schoenobius incertellus W.) for both the first and second paddy crop was not serious and it is now becoming apparent that the systematic control work of the Department of this the most serious rice pest is beginning to show results. Leaf roller skippers (Parnara Guttata Premer) appeared in the Castle Peak, Sha Tau Kok and Sheung Shui districts and for the second crop at Kung Tung, Lam Tei, Ngau Tam Mei and Sha Tin but damage to paddy was not serious. In the Pat Heung, Silver Mine Bay, Sai Kung and Castle Peak Districts some damage to second crop paddy was caused by blast disease. To control this disease a study is being made of resistant varieties. Cutworms, flea beetles, aphids, caterpillars, blister beetle, slugs and cucumber beetles were the most common insects attacking vegetables but vigilance and continuous spraying with insecticides prevented major infestations. Some loss to fruit growers was caused by scab, canker, mealy bugs, red spiders, scale insects, Lychee stink bug, June beetle and lantern flies. With developments in fruit growing attention is being given by the Agricultural Division to the training of growers in the systematic control of these pests.

(iii) *Animal Diseases.*

66. Animal production was not seriously affected by disease during the year. Two of the most important—swine fever and Newcastle disease of poultry—were kept under firm control. The farmer is now beginning to appreciate the need of early reporting in order to offset the spread of contagious disease. The department has the means of keeping these diseases under complete check but close co-operation with farmers is essential. This is gradually being obtained by the activities of extension and information services. There were no cases of rabies or rinderpest during the year and at the close of the period Foot & Mouth disease had been brought under control. The success of our livestock industries—the value of which can be gleaned from the section dealing with the survey of animal industries—is mainly dependent on disease control by an efficient organization and active field service. This has been largely achieved.

(iv) *Essential Requirements.*

67. The delivery of matured nightsoil to farmers was efficiently maintained by the Department of Co-operatives and Marketing. Farmers cannot get enough of this valuable growth promoting substance but they got all that was available. Artificial fertilizers and insecticides of approved quality were obtainable at reasonable prices and were in adequate supply. The new insecticide control measures have reduced markedly the incidence of fatalities. Pure line rice seed grown by the department, vegetable seed and seedlings in excess of departmental requirement and grafted orchard stock were supplied at cost price. Essential vaccines and drugs for livestock disease were available either from departmental sources or local business houses. Regular supplies of swine fever and Newcastle disease vaccines from Thailand and Malaya were organized and distributed by the Department. Pig breeding stock numbering 539 raised on Government stations was issued to farmers at the fixed price of $2.00 per catty. A total of 924 piculs of meat and bone meal prepared from slaughter waste at Kennedy Town was distributed by the Department to livestock raisers. Imported concentrate feeding stuffs were in adequate supply but there was some fluctuation in price. Apart from the provision and distribution of essential requirements

financial assistance to obtain supplies was provided from the Joseph Fund and the Kadoorie Agricultural Aid Loan Fund.

68. Marine engines and engine parts for the fishing industry were sufficient to meet all demands and prices were no higher than for the previous year. Similarly adequate supplies for junk building and gear for the fishing industry were available at reasonable prices.

FINANCIAL AID TO PRIMARY PRODUCERS

(i) *Kadoorie Agricultural Aid Loan Fund.*

69. This Fund is operated by a Committee of 5 in accordance with the Ordinance concerned. The Director of Agriculture, Fisheries & Forestry is Chairman of the Committee and Trustee of the Fund. Interest free loans are provided for a period ranging from 6 months to 2 years to enable farmers to purchase draft animals, breeding stock, animal feed, fertilizers, seed, implements and for many other purposes concerned with farming. The Fund began operations towards the close of 1955. A statement of the Fund as at the 31st March, 1957 is given below:—

TABLE 7

No. of Loans Approved.	*Purpose of Loan.*	*Amount Issued.*
764	Livestock & housing	$253,715.00
832	Livestock Feed	242,920.00
8	Fish Pond	19,200.00
31	Building Materials	5,760.00
19	Land Development	10,150.00
1,520	Seed and Fertilizers	131,290.19
45	Pest Control & Farm Equipment	17,130.00
3,219		$600,165.19

70. This Fund serves primarily the old established farmer of the New Territories as distinct from the J. E. Joseph Trust Fund under the control of the Director of Marketing which is directed more particularly to the organized Co-operative Societies concerned mainly with vegetable growing. An analysis of the above statement indicates that about 73% of the money was used for livestock industries and the balance for agricultural purposes. This Fund is providing valuable assistance to the farmers of the New Territories. It has led to more interest in livestock raising and in general the broadening of the

economy of the rice farmer. By keeping more livestock the rice and vegetable farmers have an additional source of manure to maintain soil fertility. This Fund together with the activities of the Kadoorie Agricultural Aid Association—discussed below —are helping in the implementation of approved agricultural policy.

(ii) *Kadoorie Agricultural Aid Association.*

71. The Kadoorie Agricultural Aid Association is a voluntary body set up by Messrs. Lawrence and Horace Kadoorie to assist farmers and farming in the New Territories. It works closely with the Agricultural Division and includes as members the Director of Agriculture, Fisheries & Forestry, the Agricultural Officer, the Senior Veterinary Officer and a Senior Assistant Agricultural Officer. Extension work is undertaken by the Divisions of Agriculture and Animal Industries and the Association works in close co-operation with the District Administration New Territories.

72. During the year under review the policy of the Committee has been to (*a*) continue with the planting of village orchards, (*b*) extend the number of dams, channels, paths, bridges, wells, piers, reservoirs and bunds, (*c*) assist in drought areas by pumping water with the pump unit donated by the Association and managed by the Department, (*d*) provide villagers with threshers and insecticide sprayers as free gifts and (*e*) help poor people (who are not able to repay loans from the fund) to get on their feet by establishing them as farmers. Details of the services rendered by the Association are set out in Tabular form at Appendix 1(M) & (O). A total of 60,248 bags of cement, 200 threshers and 400 sprayers were distributed to farmers as free gifts and 49 village orchards covering an area of 119.35 acres were established. This is development work on a grand scale. Further information on this planned extension service will be found in the special reports of the Association. The supporting work undertaken by the Department is referred to in the Agricultural Services Section of this report.

(iii) *The J. E. Joseph Trust Fund.*

73. The Director of Marketing and Registrar of Co-operative Societies is the trustee of a Fund known as the J. E. Joseph

Fund which provides loans to farmers in a similar way to the Kadoorie Fund. This Fund is used more particularly but not exclusively for vegetable Co-operative Societies members and makes a small interest charge. The Trustee is advised by the Rural Development Committee of which the Director of Agriculture, Fisheries & Forestry is a member. Full details of the operation of this Fund will be found in the Annual Report of the Director of Marketing and Co-operatives.

(iv) *The C. D. & W. Loan Fund for Fishermen.*

74. A loan Fund of $800,000 for the mechanization of fishing vessels was established in December 1953 by a loan grant made by Her Majesty's Government in the United Kingdom from Colonial Development and Welfare Funds. During the year applications were received and loans were approved by the Director of Agriculture, Fisheries & Forestry who administers the Fund. Applications for loans are investigated by staff of the Fisheries Division and repayments are made through the Fish Marketing Organization by arrangements made between the Director of Marketing and the borrower. Although individual loans have been increased from $7,000 to $10,000 for the purchase and installation of engines in junks considered suitable for the purpose, repayments have been satisfactory. Fifteen loans were approved during the year.

DEPARTMENTAL SERVICES

75. Full details of departmental services will be found in the sections of this report dealing with agriculture, animal industries, fisheries and forestry. Attention is drawn here to important developments and progress with approved policies.

(i) *Division of Agriculture.*

76. The Division of Agriculture is being gradually expanded in keeping with policy to meet the ever increasing demands for agricultural services for administration, extension and research. In particular the crop pest and disease control team is now firmly established and an assistant agricultural officer or senior supervisor is now available for extension and advisory work in each of the main farming districts of the Colony. Two Senior Assistant Agricultural Officers have been made responsible for the direction of special development schemes, resettlement and

farm improvement and to co-ordinate the activities of field officers engaged on extension and advisory work. A small headquarters unit is available to assist extension officers and other divisional heads with information and educational services. The agricultural outpost at Ko Po has been completed and an attractive orchard has been planted up in the compound. The new dry zone station at Ta Kwo Ling is taking shape and it is hoped to have this completed early in 1958. Development work on this station was facilitated by the use of the new Ferguson Tractor and agricultural equipment. Work on this station will be of great service to those farmers of the Colony who are compelled to farm under dry land conditions.

77. The special survey team and other officers concerned with development and resettlement were largely involved in land utilization surveys for resettlement and rehabilitation in various parts of the Colony. In particular much careful work was done at Shek Pik on Lantao Island to allow of the evaluation of prospects for the resettlement of the Shek Pik villagers within the catchment in the event of the construction of a new reservoir in that area. Elsewhere officers made special investigations to determine suitable areas for the resettlement of displaced people sponsored by Church and other welfare organizations. Another full time job for an Assistant Agricultural Officer with support from the Survey staff was concerned with crop compensation following the acquisition of land for Government purposes or the removal of squatter settlements.

78. The outstanding extension work undertaken by the Division during the year involved the selection of sites, the clearing of the land and the planting up of 49 village orchards. This scheme has as its basis the broadening still further of village economy by providing permanent fruit tree plantings in addition to the Forestry Lot on land unsuitable for annual cropping. In connexion with this work the terraced lands of Tai Po Agricultural Station have been changed over from rice work to the raising of budded and grafted root stock for orchard plantings.

(ii) *Division of Animal Industries.*

79. Since its inception in 1954 the new Division of Animal Industries has been settling down and is now working as an

integrated unit of the Department. Broadly the Division is concerned with the maintenance of the health of all types of animals and birds and the control of diseases spread from animal to man directly or through food of animal origin. The division is organized in three sections namely (*a*) Animal quarantine Dairies and Meat Inspection, (*b*) Animal Husbandry and (*c*) Animal Health and Disease Control. The Division is responsible for animal quarantine at Ma Tau Kok, Kennedy Town, Shek Wu Hui and the inspection and general slaughter house control in the New Territories at Tai Po and Yuen Long. It maintains at Headquarters a dairies control and inspection service. Animal husbandry experimental work is conducted on experimental stations chiefly at Castle Peak, Sheung Shui Pig Station and Sai Kung Agricultural Station. Disease control operates as a field service with the support of the diagnostic laboratory at Castle Peak. For rabies control, which is the responsibility of the Department, the Division maintains observation kennels, permanent inoculation centres, mobile inoculation teams and a dog control unit. The outstanding contributions made by the Division for the period under review are (1) the organization on a sounder basis of regular supplies of vaccines to control swine fever and Newcastle disease of poultry, (2) the eradication of tuberculosis from the dairy herds of the Colony, (3) a much greater measure of control by field inoculation teams of swine fever and Newcastle disease of poultry, (4) maintaining the high standard of complete freedom from rinderpest and rabies and (5) virtually stamping out Foot and Mouth disease. Animal husbandry investigation at Castle Peak and Sai Kung particularly of pig breeding and management are already eliciting valuable information regarding the economics of pig raising.

(iii) *Division of Fisheries.*

80. The Fisheries Division continued to give valuable service to the industry in (1) the trial of gear and fishing methods, (2) its training classes, (3) administrative and technical work concerned with mechanization, (4) its close watch and study of development in the industry particularly in the design of new craft to which it has made contributions with its own vessels "Olenka" and "Yuen Ling" and (5) the extension of pond fisheries and co-operative activities with the Fisheries Research

Unit of Hong Kong University in the development of new oyster fisheries. The Division has been handicapped to some extent by not having a distant water fishing vessel for operational investigations farther afield but it is hoped to remedy this situation in the near future. Most of its work has been of necessity confined to inshore waters.

81. With the appointment of a Craft Technician it has now been possible to give greater attention to the next stage in fisheries policy following mechanization in the design of better fishing craft that can be built in local junk yards. Already the Division has influenced a certain junk builder to make improvements in the underwater body of local fishing boat hulls. Close and friendly relations have been established with junk builders who are ready to adopt new techniques and designs in boat building and are progressive in their outlook.

82. During the year the Department launched its new inshore fishing vessel the "Yuen Ling." This is a radical departure from existing types and its lines have been much admired. It is a good sea boat and was built in a local junk yard from traditional materials.

83. The Division now possesses its own fish ponds which were constructed at Au Tau during the year together with a small office and look-out. This is a valuable addition to departmental facilities and will enable the fresh water fisheries staff to hold fry for distribution to farmers and conduct production studies on pond fisheries.

84. A new development during the year was the successful pilot experiment on blister pearl culture made by a local group in Tolo Harbour. The Penquin or Wing Oyster which occurs in these waters was successfully embedded and fair pearls were obtained. Officers of the Fisheries Division watched these operations with very great interest.

(iv) *Forestry Division.*

85. Forestry work in Hong Kong is concerned mainly with afforestation and the protection of established plantations and natural vegetation. Valuable research work which has a direct bearing on these primary duties is also conducted by the Division. The services of the Division are now well organized and for the year under review the target under policy of 1,000

acres of new plantations was exceeded. In all 1,065 acres were planted up in the Forest Reserves of Tai Lam, Kowloon Hills, Shing Mun, Pat Heung, Tai Po Kau and Shap Long in Lantao. In addition a large area of failures of previous plantings were successfully re-established, 309 acres of Forestry Lots (principally in the Sai Kung and Castle Peak areas) were planted up and 16,000 trees and shrubs were established for amenity purpose in the New Territories.

86. The policy introduced in 1953 is without doubt in keeping with the needs of the Colony and has proved to be thoroughly satisfactory in practice. Existing reserves amount to 14,136 acres mainly in the water catchment areas and of this 4,524 acres have been attended to by the Division. It is interesting to record that plantings under the Forestry Lot Scheme continue to expand and that the Division has extended its activities in Lantao Island where 116 acres of new plantings (mainly *Casuarina equisetifolia*) were successfully established at Shap Long in the catchment for the Cheung Chau water supply. With the completion of the road from Silver Mine Bay to Shek Pik and the construction of an impounding reservoir in the Shek Pik valley afforestation in Lantao will have to be accelerated.

87. Prior to 1953 very little work was done apart from nursery studies on the important problems of (1) suitable afforestation species under varying environmental conditions, (2) the successful establishment of trees on deeply eroded areas, (3) suitable species for village plantings and management under the Forestry Lot Scheme and (4) control of weeds and shrubs in fire breaks and in general the determination by research and field studies of the best silvicultural practices for Hong Kong. An important aspect of present policy is that work of this nature is being undertaken both in the field and nurseries as opportunity and facilities permit. Work of this nature is long term and it is therefore important to get started on it. Already valuable observations have been made as may be gleaned from a study of the Research Section of the Forestry Report.

(v) *Soil Survey.*

88. The Soil Survey is a special project under approved agricultural policy and is being undertaken by a specialist

officer on secondment from the United Kingdom. For convenience in administration the Soil Survey Officer is attached to the Agricultural Division for which detailed work on soil types is being undertaken but his work is also of importance to Forestry generally and in particular to afforestation work on deeply eroded areas. The field work will continue over a period of two years and the result will be a soil map of the Colony depicting the main soil types together with information on the fertility status of our soils. For the latter purpose a permanent soils laboratory has been established at Lai Chi Kok which will continue to operate in association with the Agronomists of the Agricultural Division on soil fertility problems. Apart from supplying answers to fertility problems on existing land—much of which is under high productive pressure—the soil survey should also provide information which may be used in the opening up of new and less fertile country. An interesting example of this is the soil information which has been supplied to the development officer concerned with resettlement projects at Shek Pik.

EDUCATION AND INFORMATION

89. Formal courses leading to Skipper, Coxswain and Marine Engineering Certificates are conducted at Aberdeen, Cheung Chau and Tai Po Fisheries offices. Films made by the department dealing with local agriculture, animal industries, forestry and fisheries were shown to 19,260 people in 30 centres. During the year an Annual Tree Planting Day was inaugurated by the Forestry Division and a tree planting ceremony was held in each forestry district. Villagers and school children attended the ceremonies at which talks and film shows were given by forestry staff. Organized visits to departmental stations of farmers, students and school children were arranged and many overseas visitors were taken over agricultural stations. Towards the close of the year a new radio service for farmers was introduced by Radio Hong Kong in co-operation with the Department.

AGRICULTURAL SHOW

90. As in past years the 1957 Agricultural Show was held at the Yuen Long Primary and Middle Schools. About 70,000 people attended the show which was opened by His Excellency

the Governor Sir Alexander Grantham, G.C.M.G. on 19th January, 1957. The show remained open to the public for three days and was the centre of great activity during the whole period. Many farmers brought exhibits of livestock and farm produce from outlying areas of the New Territories.

91. The parade of animals in a suitably constructed ring and the distribution of prizes caused much excitement and the music produced by the Hong Kong Police Band and the Pipes and Drums of the Gurkha Regiment added the necessary tone and colour to complete the picture. There is no doubt that great interest and keen competition has been aroused amongst farmers, who are eager to enter their livestock and produce in the various classes.

92. There are welcome signs that long established farmers are aware of the economic advantages of diversified farming and that more of them are raising vegetables on rice fallows and more livestock is being raised by farmers. Since Agricultural Shows were started in Hong Kong six years ago a distinct improvement in the way livestock exhibits are presented and the way vegetables are exhibited can be noticed.

CONFERENCES AND COMMITTEES

93. The Director of Agriculture, Fisheries & Forestry is Trustee of the Kadoorie Agricultural (Loan) Fund and Chairman of the Committee. He is also a member of the Rural Development Committee, the Fisheries Technical Policy Committee and the Kadoorie Agricultural Aid Association. During absence on leave the Director attended as delegate the World Grasslands Conference held at Palmerston North New Zealand in November 1956.

STAFF MOVEMENTS

94. (1) Mr. W. J. Blackie, Director, was on vacation leave from May 9th, 1956 to February 15th, 1957.

(2) Lt. Col. J. C. Rix acted as Director from May until September, 1956 when he left the Colony on leave prior to retirement.

(3) Mr. N. F. Wright acted as Director from September, 1956 until February, 1957.

(4) Mr. J. M. Riddell-Swan was appointed on contract as a supernumerary Veterinary Officer from May, 1956.

(5) Mr. S. Y. Chan acted as Agricultural Officer when the permanent holder was acting as Director.

(6) Mr. A. F. Robertson, Forestry Officer, was on vacation leave from February, 1956 to January, 1957. During his absence, Mr. R. J. V. Everest acted as Forestry Officer.

(7) Mr. WONG Laan Fuk was appointed to Senior Assistant Agricultural Officer from the 1st April, 1956.

(8) Mr. T. Pashby, Fishing Master, left the Colony on the expiration of his contract in February, 1957.

VISITORS TO THE DEPARTMENT

95. The following individuals or groups visited the Department during the year for discussions and tours. Many of them were taken on conducted tours to the departmental agricultural, fisheries & forestry out-stations: —

Mr. R. S. Marshall, C.B.E., Adviser in Animal Health to the Secretary of State.

Dr. M. Y. Nuttonson, Director of the American Institute of Crop Ecology.

A Delegation from Thailand consisting of Mr. Sawaeng Kulthongkham, Chief of Agricultural Economics Division and Dr. Ralph C. Elliot, Agricultural Economics Expert of USOM.

A Delegation from the Philippine Bureau of Fisheries, Manila.

A Japanese Training Vessel "Nagasaki Maru" attached to the Faculty of Fisheries, Nagasaki University.

Dr. Vu Thien Thai, Director of Animal Husbandry, Saigon, together with Dr. Nguyen Ngoc Minh.

A group of students from Cambodia.

Mr. Duang Tejakomol and Mr. Visutra Vacharakul, Officers of the Fisheries Department, Bangkok.

Dr. J. R. Snell, World Health Organization Consultant on Sanitation.

Lord Selkirk, Chancellor of the Duchy of Lancaster.

Mr. H. H. A. Indrasena, Superintendent of Fresh Water Fisheries, Ceylon.

Mr. R. M. Baker, Senior Soil Conservation Adviser, Department of Agriculture, Adelaide, Australia.

Mr. Gordon Lamont and Mr. John Taber, Field Representatives of the Dairy Industries Society.

Sir Thomas Dalling, Chief Veterinarian of the United Nations Food and Agriculture Organization.

Mr. Heong Kok Hee and Mr. Che Abdul Halim, Officers of the Fisheries Department, Federation of Malaya.

Mr. Teo Teng Hong, Officer of the Fisheries Department, Singapore.

Mr. Hong Kee Bin, Officer of the Fisheries Department, Sarawak.

A Japanese Training Vessel "Shunkotsu Maru" attached to the Shimonoseki College of Fisheries.

PART 2

AGRICULTURAL DIVISION

Officer-in-charge: Mr. N. F. Wright, I.S.O., M.B.E.—Agricultural Officer.

96. It was a busy year for the officers of the Agricultural Division. Apart from normal extension and advisory services to farmers, Government Departments and the general public and also approved crop studies on agricultural stations, the Division was concerned with special projects involving land utilization. The more important of these were (i) village orchard scheme, (ii) Shek Pik resettlement, (iii) crop compensation assessments following the acquisition of land for public purposes, (iv) survey of the use of Crown Land held on agricultural permit, (v) survey and advisory work for private organizations concerned with resettlement, (vi) survey of crops involving area and yield for export under certificates of origin and (vii) rice surveys. As well as maintaining existing agricultural stations at a high level of efficiency the new outpost at Ko Po was completed, Tai Po Agricultural Station was converted for orchard work and a new station at Ta Kwo Ling was well advanced in development.

Extension and Advisory Services

(i) *The Village Orchard Scheme.*

97. To encourage the growing of more fruit in the Colony, a village orchard scheme was started in 1955. The scheme met with ready response from the villagers. This meant that wherever suitable sites were found near villages, the villagers co-operated by preparing the land, erecting the fencing, digging the holes and planting the trees and the Kadoorie Agricultural Aid Association supplied all the fencing material, citrus and other fruit seedlings free of charge. In all cases the work was supervised by a member of the Agricultural Division. 49 village

orchards covering a total area of 119.38 acres were established, since the commencement of the scheme. The number and location of the orchards are set out at Appendix 1(P).

98. Stimulated by the good demand and high prices paid for fruit, farmers have increased the acreage they have under fruit trees. Assisted financially by the Kadoorie Agricultural Aid Association and under the technical guidance of the Division of Agriculture, 41 village orchards covering 108 acres (in which 20,000 fruit trees were planted) were established. In addition 100,000 pineapple suckers have been planted and 200,000 more which are on order from Singapore will be planted on arrival in various areas of the Colony.

99. In order to meet the demand for fruit trees for the establishment of the village orchards it has been necessary to extend the nursery space which formerly was confined to the Castle Peak Agricultural Station. For this purpose the Tai Po Agricultural Station has been converted to a citrus nursery where rough lemons are grown for rootstock and subsequently grafted to the variety of citrus required.

100. Of the 20,000 citrus seeds sown for rootstock at the Tai Po and Castle Peak Stations, 15,000 have been successfully grafted and are ready for distribution this season.

101. Some of the scions used in grafting to local rootstock have been imported from Trinidad and the United States of America. Where compatibility exists these grafts are doing well.

102. Practice and improved techniques have increased the percentage of "takes" of grafted plants from 25% in 1956 to 65% in 1957.

103. Lychees are propagated mainly by air-layering.

104. The period during which grafting may be practised in the Colony is very short, normally from January to March. Consequently seedlings which are to be used as "rootstock" have to be raised to coincide with this period.

TABLE 8

Seeds sown and raised at the Tai Po Station, 1956/57

Kinds of Rootstock.	*No. of plants.*
1. Rough lemon	7,327
2. Japanese citron (Trinidad)	375
3. Local lemon	7,132
4. Grapefruit (Trinidad)	131
5. Tangelo (Trinidad)	24
6. Calamondin	28
7. Sour orange (Trinidad)	83
8. Dominica wild grapefruit (Trinidad)	35
9. Myer lemon	883
10. Cleopatra Mandarin	250
11. Trifoliate	156
Total	16,424

TABLE 9

Results of Propagation

Scions used.	*No. of plans grafted.*	*No. of takes.*
1. Grape fruit	76	63
2. Kumquat	34	11
3. Lemon, variegated	13	12
4. Mandarin orange (var. Chu Kum)	146	136
5. Mandarin orange (var. Honey Bucket)	63	48
6. Mandarin orange (var. Shu Kum)	37	36
7. Mandarin orange (var. Wui Kum)	804	382
8. Orange, var. Ming Tau (sweet)	2,735	2,191
9. Orange, var. Heung Shui (semi-sweet)	985	852
10. Pomelo (var. Heung Yau)	51	43
11. Pomelo (var. Shatin Yau)	551	468
12. Tangerine (var. Fook Kut)	411	371
13. Tangerine (var. Nin Kut)	5,114	4,271
Total	11,020	8,889

(ii) *Shek Pik Resettlement.*

105. If engineering conditions are satisfactory it is proposed to construct a reservoir at Shek Pik on the island of Lantao to

meet the ever increasing needs for domestic water supply. This means that about 70 families of 259 people whose ancestors have farmed the land of the valley floor for centuries will have to be removed and resettled elsewhere. It is intended if possible to resettle these people within the catchment area as close as possible to their original ancestral lands and this will involve the Department ultimately in the construction of new farming areas from unkindly soil. The first phase of this work was completed by the survey team in the year under review and it appears likely that sufficient land may be found to meet the needs of these people. Departmental officers (1) made a careful survey of existing holdings and assets, (2) surveyed and mapped likely areas for development, (3) made soil studies of the area concerned and (4) provided a basic plan of development. Since it will be impossible to find sufficient flat land to replace the existing paddy areas a new farming system is needed with emphasis on livestock, vegetables and fruit trees. The new South Lantao Road will provide access to markets. The work of the survey team and specialist officers concerned with these studies was helped considerably by information already available on abandoned land obtained during the land utilization survey of 1954.

(iii) *Crop Compensation.*

106. Clearance of squatters from areas which are required for industrial purposes, road making, dam construction, damage to crops caused by Army exercises, etc. requires the services of the Department in evaluating the extent of the damage and the compensation to be paid. A considerable amount of time is spent on this work which is carried out at the request of and in co-operation with the departments concerned. Details of this work are included at Appendix 1(L).

(iv) *Agricultural Permits—Crown Land.*

107. The temporary occupation of Crown Land for agricultural purposes is granted by the District Officers of the District Administration, New Territories, for a period not exceeding one year. Permits are renewable annually if the land has been

developed and used to the satisfaction of the Director of Agriculture. A good deal of time was taken up in the inspection of this land some of which is located in the remote areas of the Colony. The following figures show the number of applications and area of land investigated: —

District.	*No. of applications.*	*Acreage.*
Northern district ...	41	26.04 acres
Southern district ...	50	51.88 „
Total	91 applications	77.92 acres

(v) *Resettlement—Private Organizations.*

108. Surveys were made and advice given on development and cropping in the opening up of (*a*) 26.0 dou chung of land for the World Church Service at Cheung Sheung (11 families), (*b*) 26 d.c. of land for Mr. G. Borgeest at Nam Shan and Luk Wu (16 families), (*c*) 24 d.c. of land for Mr. S. Y. Lee, Church Service (4 families).

109. A special investigation of Nim Shue Wan on Lantao Island was made for the Kadoorie Agricultural Aid Association. In 1955 there were 14 families at Nim Shue Wan who cultivated 24 d.c. of land or 1.71 d.c. of land per family. By the close of the year the area developed for crops and village orchards amounted to 122 d.c. for 31 families or 3.93 d.c. per family. Land was made available by the District Administration and this was developed with financial assistance from K.A.A.A. technical guidance and supervision by departmental officers and labour by the villagers themselves. The Kadoorie Agricultural Aid Association contributed cement to construct sea walls, a pier, spring wells and pigsties. Pigs including 20 breeding sows were given as free gifts to the villagers, a village orchard of 12 d.c. was planted up and loans for pig feed made available from the Kadoorie Agricultural (Loan) Fund. The Department also arranged with the Marketing Department a regular supply of nightsoil which they collect from the Tsuen Wan maturation tanks. This supply is reinforced by pig manure and compost made by the villagers from the town garbage of Peng Chau Island. A 4-compartment compost pit was erected by the

Department to help the villagers to conserve the fertility of their lands.

110. The results achieved at Nim Shue Wan indicate the great importance of planned resettlement and development. It also emphasizes the importance of livestock. Nim Shue Wan is the model for the Colony.

(vi) *Export Crops—Certificate of Origin.*

111. Full data on export crops are set out at Appendix 1(G). The Division is responsible for (*a*) certification of farmers who produce crops for export, (*b*) the accurate measurement of areas under individual crops and (*c*) the assessment of yield. On the basis of these determinations certificates of origin are issued. This work involved the survey of 2,291 d.c. (approx. 382 acres) under crop and yield assessment at harvest periods.

(vii) *Rice Surveys.*

112. Dry conditions during the early part of the season delayed the transplanting of paddy seedlings. In the districts of Kam Tin, San Tin, Sheung Shui and other areas, 10,881 acres were left unplanted. The following table gives the areas and the acreage affected:—

Districts.	*Total acreage normally under paddy (fresh water).*	*Acreage affected by drought.*
1. Kam Tin & San Tin	3,788.52	1,494.39
2. Yuen Long, Peng Shan & Castle Peak	5,012.17	2,813.32
3. Tai Po, Sai Kung North, Sheung Shui, Ta Kwo Ling, Sha Tau Kok	16,779.06	6,395.88
4. Tsuen Wan, Lantao, offshore islands, Sha Tin, Sai Kung South	3,412.91	178.00
Grand Total	28,992.66	10,881.59

113. From the above it will be seen that approximately 40% of the paddy land was not planted due to drought. Conditions however improved during the growing period and those who were able to put in a crop reaped satisfactory harvests in July.

114. The absence of insect pests and an even distribution of rain during the second crop paddy period resulted in good

harvests in December. Details of the two paddy crops are set out in Appendix 1(C). At Appendix 1(D) paddy production by districts is recorded.

(viii) *Crop Pests and Disease Control.*

115. The insect pest and disease control team visited 210 villages, spraying and assisting in spraying 3,871.91 dou chung of crops. They also sprayed 6,710 fruit trees for farmers in various districts.

116. During these operations 400 sprayers were in use and 20 gallons of insecticide were used.

117. Records of yields taken from fourteen paddy growers who were selected as demonstrators by the Department and who were assisted in spraying their crops showed an increase in yield of 14.7%. Details of this work are recorded in the following table: —

TABLE 10

Insect Pest Control

Crop.	*Season (quarter).*	*No. of villages visited.*	*No. of families helped.*	*No. of trees sprayed.*	*Crop area treated (d.c.).*
Fruit	1st	39	1,158	4,886	189.8
	2nd	25	—	—	311.46
	3rd	43	—	—	905.65
	4th	14	44	1,824	100
Paddy	1st	10	166	—	444
	2nd	68	535	—	1,718
	3rd	4	7	—	106
	4th	—	—	—	—
Vegetable ...	1st	—	—	—	—
	2nd	4	6	66	17
	3rd	2	14	—	46
	4th	1	3	—	34
Total		210	1,933	6,776	3,871.91 or 645.31 acres.

(ix) *Extension and Advisory Duties—General.*

118. Apart from the special tasks referred to above district agricultural officers make personal visits to individual farmers

in connexion with loan requests and provide the Committee with special reports on each applicant. Frequent tours of the districts are made and farmers are advised on how they can improve their economy and on the services available to assist them. The general direction in accordance with policy is to encourage rice farmers to (*a*) include pig and poultry raising in their farm economy and step up their breeding stock, (*b*) use more fallow land for vegetable growing, (*c*) plant up permanent fruit trees, (*d*) use organic fertilizers (including compost made on the farms) reinforced with economic dressings of artificial fertilizers to maintain fertility, (*e*) control pests and diseases of crops and animals and in general (*f*) improve their crop and animal husbandry. Agricultural officers address organized farmers meetings, arrange visits of farmers to demonstration and agricultural stations for advice on the purchase of stock and seed, and on management and development problems and organize special demonstrations and visits of an educational nature. Since the establishment of the Kadoorie Agricultural Aid Loan Fund in 1955 field officers of the Department have investigated and reported on 3,219 requests for financial assistance from the Fund and have brought to the attention of the Director (as a member of the Kadoorie Agricultural Aid Association) village problems and farming needs. This exploratory work of the field staff is of first importance in the framing of K.A.A.A. policy and its integration with approved agricultural policy. Individual cases investigated by agricultural officers for K.A.A.A. assistance was in excess of 10,000. These painstaking and difficult tasks are not in themselves spectacular but their importance is reflected in the greatly increased output of agricultural and livestock products referred to in the General Section of this report.

Experimental Work — Field Trials

119. Experimental work and field trials are carried out on agricultural stations and at chosen centres elsewhere and are confined to practical problems of concern to local farmers and

the administration. In particular this work is directed to the improvement in yield of local crops and sustained production.

(i) *Rice Blast Disease: Studies with Resistant Varieties.*

120. Although as stated above crops were comparatively free from insect pests, in one area Silver Mine Bay, about 30% of the paddy was damaged by "blast disease".

121. The local variety of paddy most resistant to this disease is known as "Lo Shu Ngar" and the variety which is most susceptible is "Wong Hok Chai Mei". Efforts are being made to extend the more resistant variety to farmers in areas where the disease occurs most.

122. The varieties which have been tested for resistance to "blast" are as follows:—

TABLE 11

Station.	*Varieties.*	*Yield per d.c. in catties.*	*Resistance.*
1. Tai Po	Lo Shu Ngar	252	Very good
	Tai Ngar	217	Good
2. Silver Mine Bay ...	Lo Shu Ngar	238	Very good
	Late Sze Mui	227	Good
3. Sai Kung	Wong Hok Chai Mei	153	Very good
	Kuk Chai	272	Good
	Sze Mui	346	Very good
	Lo Shu Ngar	302	Very good
4. Sha Tin	Wong Hok Chai Mei	195	Poor
	Wong Chim	302	Good
	Hon Lo Chim	340	Very good

(ii) *Tests on Insecticides.*

123. There have been considerable developments over the past five years in new organic insecticides for the control of insect pests on crops and fruit trees. Some of these have specific killing properties while others are more general in their action. Many of them, particularly some of the organic phosphate types, are harmful to human beings if care is not taken. The entomologist has tested out a range of these new compounds against local insect pests and his results are summarized in the following table:—

TABLE 12

Insecticidal Test on Insects in 1956

Insecticide or Fungicide	Parts of Insecticide or Fungicide	Parts of H_2O	Insect or Pest Control	Time of Death	% of Control	Source (Manufacturer)	Effectiveness	Host Plant	Remarks
50% Malathion Emulsion	1	1600	flea beetle	16 hrs.	60%	Black Leaf	fair	Crucifers	
50% Dipterex Emulsion	1	40 +granular sugar	housefly	3-5 min.	99%	Bayer	excellent	—	
19½% Endrin + 57.5% Malathion	1+1.5	360	gold dust snout beetle	—	90%	Shell & Black Leaf Co.	very good	Citrus	
50% Chlorthion Emulsion	1	1000 800	flea beetle	6 min. 4 min.	99%	Bayer	excellent	Crucifers	
Metasystox 5% Emulsion	1	1050	red spider mite, aphids	36 hrs.	95%	Bayer	excellent	Citrus	
4426	1	726	C. scab C. canker	—	60%	Bayer	fairly good	Citrus	
C.R.A.G.	1	400	—do—	—	55%	Union Carbide & Carbon Corp.	fairly good	Citrus	
Aramite	1	400	red spider mite	—	98%	U.S.A.	excellent	Papaya	
Chlorobenzilate	1	666	—do—	—	86%	Geigy Co.	very good	Papaya	
Chlorocide	1	533	—do—	—	59%	Boots Co.	fair	Papaya	
50% Malathion Emulsion	1	378	—do—	—	99%	Fofas	excellent	Citrus	
Basudin 60% Emulsion	1	1000	flea beetle	10 min.	95%	Geigy Co.	excellent	Mustard (var. Mui Tsoi)	
Metasystox 50% Emulsion	1	1050	aphids	16 hrs.	100%	Bayers	excellent	Chrysanthemum	The residue effect lasted 32 days
Methoxychlor 25% Emulsion	1	250	flea beetle	24 hrs.	85%	Geigy Co.	very good	Chinese flowering cabbage	
Methoxychlor 25% Emulsion	1	500	—do—	24 hrs.	50%	—do—	fair	—do—	

(iii) *Spacing Trial (Paddy).*

124. Experiments to determine that most suitable planting distance between clumps to increase the yield in paddy were carried out at the Castle Peak, Sai Kung and Silver Mine Bay Stations. The following table gives the results of the experiments:—

TABLE 13

Paddy Spacing Trial

Layout: 10 randomised blocks Plot size: 6′×6′.

Experiment	1½′×1′		1′×1′		9″×10″		6″×6″		
	Mean yield	C.E.	Mean yield	C.E.	Mean yield	C.E.	Mean yield	C.E.	
C. P. 1/F56 ...	27.3	98	25.9	93	27.7	100	27.7	100	not significant
C. P. 4/S56 ...	10.3	87	11.0	92	11.8	100	9.6	81	S.E.=.63 M.S.D.(5%)= 2.96
S. K. 1/F56...	26.45	89	38.85	95	40.85	100	37.15	91	S.E.=1.09 M.S.D.(5%)= 2.101
S. M. B. 1/F56	20.1	95	23.2	109	21.2	100	21.4	101	S.E.=.98 M.S.D.(5%)= 2.101

Yield calculated in taels (1 tael=1⅓ oz)
S. E. — standard error
C. E. — comparative efficiency
M. S. D. — minimum significant difference.

125. From the above table it can be seen that distances of 1′ × 1′ and 9″ × 10″ gave the best results.

(iv) *Variety Trial (Paddy).*

126. A variety test of 2nd crop paddy was carried out in the Shatin Station. The following table shows the yields of the different varieties:—

TABLE 14

Paddy Variety Trial

Layout: 5 randomised block; Plot Size: 4′×10′; Yield: taels per plot.

Variety	Mean Yield (catties)	Yield as percentage of Mean (catties)	Yield in catties per dau chung
1. Kau Tsai	22.2	76	252
2. Leung Cho Kuk.....	39.6	136	449

TABLE 14—*Contd.*

	Variety	Mean Yield (catties)	Yield as percentage of Mean (catties)	Yield in catties per dau chung
3.	Pak Sap Yet	37.4	129	424
4.	Lo Shu Ngar	32.6	112	370
5.	Kong Chim	31.6	109	358
6.	Hon Lo Chim	28.8	99	327
7.	Fall Crop Sze Mui	31.2	108	354
8.	Wong Hok Chai Mei	18.0	62	204
9.	Pak Hok Chai Mei	31.2	108	354
10.	Chan Shui Chim	32.2	111	365
11.	Sham Sin Kuk	37.2	128	422
12.	Sang So Kuk	28.8	96	327
13.	Ko Keuk	33.4	115	379
14.	Hung Tau Keng	26.4	91	299
15.	Shui Chim	31.8	110	361
16.	Wong Chim	22.2	76	252
17.	Yau Chim	34.4	118	390
18.	Sam Che Heung	31.0	107	352
19.	Wong Lor Tsai	27.0	93	307
20.	Hung Lor	16.4	57	186
21.	Cha Tsai	27.4	94	311
22.	Ham Moon	31.2	107	354
23.	Tai Lor	20.8	72	236
24.	Heung Keng Lor	23.6	81	268

Standard Error=2.40
Minimum Significant Difference (—5%)=2.306

127. From the above table it may be noted that Leung Cho Kuk, which is a first crop variety, was successfully planted during the 2nd crop period and proved to be a heavy yielder. Wong Hok Chai Mei, due to its susceptibility to blast, gave a poor yield while Lo Shu Ngar, a mid-early maturing and blast-resistant variety, gave a comparatively high yield.

(v) *Liming Trial (Paddy).*

128. The object of this trial was to investigate the need for applying lime to paddy fields and the quantity required by the crop. The following table shows the result of the trial:—

TABLE 15

Liming Trial

Layout: 8 randomised blocks Plot size: 10′×10′.

	Control	400 lbs per acre	800 lbs per acre	1,200 lbs per acre
Yield as percentage of control...	100	115	120	125
Yield in taels per plot.....	39.25	44.25	47.25	49.13

S.E. = 1.63
M.S.D. (1%) = 2.977

129. Differences in this trial were significant at the 1% level. It is noted that a dressing of 1,200 lbs of lime per acre gave the best result.

(vi) *Application of Fertilizer (Paddy).*

130. A trial was made to determine which of the following methods of fertilizer application to paddy crops was the best: —

(A) Plough in all the fertilizer before transplanting takes place.

(B) Plough in 2/3 of the fertilizer before transplanting, and top-dress the remaining 1 3 after the paddy seedlings have been established in the field.

(C) Plough in 1/2 of the fertilizer before transplanting. Top-dress the remaining half after the seedlings have been established.

(D) Top-dress half the fertilizer after transplanting and the other half just before the flowering stage.

TABLE 16

Application of fertilizer Trial

Layout: 10 randomised blocks Plot size: 6′×6′.

	A	B	C	D
Mean yield in taels per plot	26.1	20.9	18.9	20.9
Comparative efficiency	125	100	90	100

S.E. = 1.19
M.S.D. (1%) = 4.6

131. From the above figures it would appear that it pays to apply all the fertilizer, by ploughing it in before the crop is planted.

(vii) *Sweet potato trials.*

132. Trails were made to observe which varieties of sweet potato were best suited for producing roots and/or vines in order to eliminate some of the many varieties which are grown by farmers. The results of these trials are as follows:—

TABLE 17

Sweet Potato Variety Test

Variety No.	Vine		Root	
	Variety Mean in taels per plot	Comparative efficiency	Variety Mean in taels per plot	Comparative efficiency
Gr. Mean	245.98	100	130.95	100
7	199.50	81	153.00	117
28	214.75	87	208.50	159
29	203.50	83	210.50	161
33	186.75	76	215.25	164
52	259.25	105	103.00	79
54	186.50	76	129.25	99
59	283.75	156	100.00	76
183	190.50	77	207.75	159
190	220.75	90	216.25	165
193	262.00	107	70.25	54
197	222.00	90	105.00	80
203	226.75	92	127.00	97
210	265.00	108	169.25	129
213	279.75	114	166.50	127
214	283.50	115	90.25	69
216	325.00	132	52.00	40
220	299.75	122	116.00	89
221	314.25	128	41.00	31
223	230.00	94	93.00	71
228	266.25	108	45.25	35

S.E. (vine): 14.94
(root): 4.87
M.S.D. (5%): 2.447

TABLE 18

Sweet Potato Variety Test

Layout : 4 randomised blocks Plot size : 10′ × 4′.

Variety No.	Vine		Root	
	Variety Mean in taels per plot	Comparative efficiency	Variety Mean in taels per plot	Comparative efficiency
Gr. Mean	218.07	100	119.14	100
79	260.25	119	77.25	65
85	302.75	139	80.75	68
135	195.50	90	206.25	173
136	226.25	58	130.75	110
137	184.75	85	98.00	82
149	219.75	101	69.75	59
153	232.00	106	176.00	148
157	282.25	129	94.00	79
158	253.00	116	114.50	96
159	196.75	90	168.75	142
160	234.50	108	101.25	85
161	239.25	110	154.25	129
163	182.25	84	93.00	78
165	198.00	91	104.75	88
166	223.50	103	91.75	77
170	246.00	113	143.25	120
172	216.00	99	134.50	113
177	184.00	84	195.50	164
179	192.50	88	220.50	185
185	204.50	94	61.00	51
187	239.50	110	122.00	102
189	209.00	96	74.00	62
205	207.00	95	78.00	57
207	204.00	94	79.75	67

S.E. (vine) : 8.01
(root) : 14.63
M.S.D. (5%) : 2.447

Summary :—

Highest Yields.

(*a*) Vine — Var : 59, 79, 85, 157, 216, 220, 221.
(*b*) Root — Var : 28, 29, 33, 135, 148, 159, 177, 179, 183, 190, 213.
(*c*) Duel purposes — Var : 161, 170, 210.

(viii) *Fertilizer Test (Vegetable).*

133. Experiments to test the effect of the use of compost on vegetable land in comparison with several other fertilizer combinations were conducted at the Sheung Shui Agricultural Station. One experiment, using water spinach as the indicating plant, was carried out in the rainy season when the large amount of moisture present made the fertilizer readily soluable and reduced the chances of residual effect.

TABLE 19

Fertilizer Test on Water Spinach

Experiment	Weight in catties						
	1	2	3	4	Total	Mean Yield	Percentage
A. Compost	340	272	264	312	1,188	297	100
B. Comp. & N/S	352	510	568	464	1,894	473.5	159
C. Comp. & Inorg. bal. fert.	624	464	584	560	2,232	558	188
D. Comp. & Org. bal. fert.	392	336	264	256	1,248	312	105
E. Comp. & Ammon. Sulphate	456	432	512	464	1,384	466	157
F. Comp. & peanut cake	496	512	552	584	2,144	536	180
Total	2,660	2,526	2,744	2,640	10,570		

S.E. = 35.02
M.S.D. (5%) = 2.447

Degree of Significance:—

Highly significant: B & A, C & A, D & A, E & A, F & A, C & D, E & D, F & D.
Significant: B & D, C & E.
Less significant: C & B.
Not significant: D & A, B & E, F & B, C & F, F & E.

Indications:—

1. Compost plus any of the other fertilizers gave better results than compost used alone.
2. Nightsoil, ammonium sulphate or peanut cake used alone gave equal results.
3. A complete balanced fertilizer gave better results than nitrogen used alone.
4. Compost plus a complete balanced fertilizer gave the best results.

134. Another test using lettuce as indicating plant was carried out in the dry season when the small amount of moisture caused a drop of PH value in the soil. The following table shows the results of the test:—

TABLE 20

Fertilizer Test on Lettuce

Treatment	Weight in Catties						
	1	2	3	4	Total	Mean Yield	Percentage
A. Compost	13	14	13	13	53	13.25	100
B. Comp. & nightsoil	19	16	20	20	75	18.75	142
C. Comp. & Inorg. bal. fert.	9	9	10	14	42	10.50	79
D. Comp. & Org. bal. fert.	10	18	21	17	76	19.00	143
E. Comp. & Ammon. Sulphate	18	5	6	13	42	10.50	79
F. Comp. & peanut cake	13	19	17	18	67	16.75	126

S.E. = 185
M.S.D. (5%) = 2.447

Degree of Significance :—

Highly significant: B & C, B & E, D & C, D & E.
Significant: B & A, D & A, F & F, F & E.
Not significant: A & C, A & E, F & A, D & B, B & F, E & C, D & F.

Indications :—

1. Comparison of results between organic and inorganic fertilizers was significant.
2. Generally organic fertilizer treatment produced higher yields during dry season.

PART 3

SPECIAL PROJECT — SOIL SURVEY

Officer-in-charge: Mr. C. J. Grant, M.A.—Soil Survey Officer.

135. The soil survey of Hong Kong was begun in October 1956 and will be completed in 1959. A rapid reconnaissance survey of the main soil types was carried out in October to December and on the basis of this short survey a working classification was devised. It was decided that agricultural soils and soils of potential agricultural value should be mapped in detail, basing their classification on the parent material and drainage conditions of the soil. Mapping is carried out with the aid of aerial photographs which may be stereoscopically interpreted, and the soil boundaries are plotted on the standard 1/20,000 maps. Hill soils are given a rather wider classification based on their parent material and mode of formation. Ground checking of soil boundaries in the upland areas is neither so intensive nor so necessary as in the paddy fields and rather more liberal use is made of air photo interpretation.

136. Frequent inspection pits are dug so that the soil profile may be examined in detail and samples of each soil horizon may be taken for full laboratory analysis. More than 100 soil samples have been sent to Scotland for analysis at the Macaulay Institute for Soil Research and up to 300 samples are being analyzed in our own laboratory.

137. In addition to the survey work outlined above, special surveys have been undertaken from time to time as required in connexion with new projects of the Department.

Soil Laboratory.

138. A small laboratory has been established at Lai Chi Kok and equipped to handle most of the normal soil analyses. This laboratory is not only useful in connexion with the current soil survey but may be expected to undertake most of the agricultural analyses which are required in connexion with improvements in agricultural practices.

Field Methods.

139. The main objective of a soil survey is the identification and description of soils and the mapping of their distribution. The features of the profile which are of importance are colour, texture, structure, organic matter, roots, wetness, stoniness, mottling and thickness of horizons. By studying these characters in small pits dug at frequent intervals it becomes apparent that while each profile has individual characteristics, some are so alike that they may be placed in one primary category. The primary category for mapping is the soil series, which comprises soils with similar type and arrangement of horizons developed on similar parent material.

140. A major problem in mapping soil series is delineation of boundaries. Typical profiles of two soil series may differ widely but where the series are contiguous it is usual for them to merge, sometimes over a considerable distance. Consequently a line or a map often implies a merging of soil series and not a sharp change in soil morphology. Frequently an appreciation of the relationship between soil profile characteristics and the topography and vegetation assists in accurate delimitation of series. Aerial photographs often show these soil vegetation changes more clearly than ground survey though field checking is always necessary.

Classification.

141. From a soils point of view there are only two main rock types in Hong Kong *i.e.* granitic and volcanic. The granitic rocks give rise to one range of parent materials while the volcanic rocks form quite a different range.

142. For example, the following range of parent materials occurs on the volcanic rocks:—

TABLE 21

Parent Material	Soil Title	Typical Locality
Fresh Rock	Skeletal	Tai Mo Shan
Rotten Rock	In situ soils	Castle Peak
Material which has slipped or slumped down steep hillsides	Colluvium	Pak Ngau Shek
Material which has been washed down by intermittent mountain torrents	Boulder Fan Material	Lam Tsuen

TABLE 21—*Contd.*

Parent Material	Soil Title	Typical Locality
Material washed down by regular mountain streams	Alluvial Fan Material	Tai Kong Po
Material laid down by slow moving streams in wide valleys	Alluvium	Kam Tin
Material laid down under the sea	Marine Alluvium	San Tin

143. Each of these parent materials is reacted on by the various soil forming processes to form soil series which may be classified as in Table 22 which shows series named after areas of typical occurrence.

TABLE 22

	Freely Drained	Imperfectly Drained	Poorly Drained	Very Poorly Drained
Marine Alluvium	—	Mai Po	San Tin	Tai Hong Wai
Alluvium	Kam Tin	Chik Nai Ping	Kan Po	—
Alluvial Fan	Pat Heung	Tai Kong Po	—	—
Boulder Fan	Lam Tsuen	Hong Lok Yuen	Tong Min Tsun	—
Colluvium	—	Pak Ngau Shek	—	—
In Situ	—	Castle Peak	—	—
Sheltal	Tai Mo Shan	—	—	—

Areas Surveyed.

144. (*a*) paddy soils:—

(i) Sha Tin Valley
(ii) Kam Tin—Shek Kong Valley
(iii) Castle Peak
(iv) Lam Tsuen Valley
(v) Sai Kung
(vi) Mai Po—San Tin area

(*b*) hill soils:—

(i) Castle Peak Ranger
(ii) Tai Mo Shan
(iii) Kowloon Peak
(iv) Ma On Shan
(v) Tai Tau Yan
(vi) Pat Lin Range

The soils occurring in the above areas have been mapped on aerial photographs and the lines transferred to maps on the scale of 1/20,000. The soil variations are so complex and the details of mapping in paddy growing areas is so great that no attempt has been made to reduce the maps to a scale of 1 inch per mile though it may later be possible to produce a generalized soil map.

Special Surveys.

(i) *Ta Kwo Ling.*

145. The arable area in Hong Kong must be extended but few of the possible areas are suitable for rice therefore the Department of Agriculture, Fisheries & Forestry has set up an agricultural station to investigate the possibilities of dry farming. This new station at Ta Kwo Ling was surveyed in detail and mapped on the scale of 25 inches per mile. Thirty five soil samples were taken to illustrate the different soils and horizons occurring in the station. It is hoped that this soil survey report may assist in the laying down of experiments and the evaluation of results.

(ii) *Shek Pik.*

146. In the environs of the proposed new dam at Shek Pik there are several pockets of land which might be usefully developed for agriculture and these have been mapped to assess their suitability for different types of farming. A report on the soils of the Shek Pik area was prepared for the Agricultural Division and arrangements have been made to undertake a more detailed survey when the new agricultural station is set up.

(iii) *Fish Pond Soils.*

147. Underwater sediments are not normally given much consideration in Soil Survey but the soils of fish ponds have such a strong bearing on fish culture that they cannot well be ignored. The problem of differentiation of these soils is complicated by the lack of scientific data and the difficulty of obtaining representative samples. In dealing with these soils reliance will have to be placed on laboratory analyses rather than field interpretation.

(iv) *Reclamation.*

148. In the course of the survey it has become obvious that certain areas which are now unproductive might well be developed for agriculture. The salt marshes surrounding Deep Bay represent a particular case in point. Here the soil is uniformly finely textured (silt loam to silty clay loam) and should be relatively easily reclaimed. The salinity is naturally very high but with suitable remedial measures the area could support rice and other crops. Before reclamation could begin a thorough, detailed soil survey would be required but from

preliminary examination the area is potentially highly productive.

149. Though Deep Bay is the most spectacular area for reclamation there are other similar areas in Sha Tin and at Tai Po Market. The Sha Tin soils are very sandy and stony but they might well be reclaimed for industrial purposes. On the other hand the mud flats round Tai Po are silts and loams which would form very valuable agricultural land if reclaimed.

PART 4

ANIMAL INDUSTRIES DIVISION

Officer-in-charge: Mr. J. M. Riddell-Swan, B.Sc., M.R.C.V.S.—Acting Senior Veterinary Officer.

150. The Animal Industries Division is concerned with the health of domestic animals, the improvement of animal husbandry and the expansion of the animal industries of the Colony. It co-operates with the Agricultural Division on extension work concerned with the expansion and incorporation of animal husbandry in the farming pattern of the Colony. The report which follows deals with (A) Disease Control, (B) Animal Husbandry, (C) Animal Quarantine, Dairies and Meat Inspection and (D) Veterinary Inspection.

(A) Disease Control.

151. This section of the Division is concerned with the investigation, prevention and treatment of disease in animals and birds and the control of rabies in dogs.

(i) *Investigation and Prevention of Disease.*

152. The Colony continued to be divided into three areas each with an officer in charge of animal disease investigation. Poultry disease investigation is in the hands of a specialized officer.

153. During the year, officers of the Division investigated 1,428 outbreaks of disease in pigs totalling 5,828 animals; 194 outbreaks of disease in cattle totalling 539 animals; 6 outbreaks of disease in buffaloes totalling 21 animals and 115 outbreaks of disease in fowls totalling 85,000 birds.

154. These officers are also responsible for the effective carrying out of the preventive inoculation schemes against disease in animals and birds in their areas and the tendering of advice on feeding, management and other matters pertaining to livestock. Wherever possible, specimens are collected and sent to the diagnostic laboratory for examination.

(ii) *Diagnostic Laboratory.*

155. The veterinary diagnostic laboratory built at Castle Peak Agricultural Station has been functioning since May, 1956. It is equipped for general routine bacteriological examinations and is capable of producing all the media and reagents necessary for the isolation and identification of pathogenic organisms from specimens sent in by field officers of the Department and in some cases, by the farmers themselves. In addition, this laboratory now produces all the lapinised rinderpest vaccine used in the Colony. When necessary the facilities of the Kowloon Pathological Institute are very kindly made available for sterilization, etc.

156. As an adjunct to the laboratory, there is a Laboratory Animal Breeding Section which provides rabbits, rats, guinea pigs, mice and birds for laboratory purposes.

(iii) *Tuberculosis.*

157. In June, 1956 an official tuberculosis eradication scheme for all the local dairy cattle was inaugurated in order to safeguard the milk supply of the Colony. Previously, periodic tuberculin tests of the dairy cattle on the Kowloon Peninsula and in the New Territories had been carried out by Veterinary Officers of this Department and some farmers had already voluntarily eliminated their reactors. For some time past, the Hong Kong Dairy Farm Company have maintained a private tuberculosis-free herd on Hong Kong Island. Preliminary testing using the single comparative intradermal test (Weybridge P.P.D. tuberculin) was carried out, revealing an incidence of infection of 29 per cent. From this data a compensation figure was evolved.

158. The first eradication test was carried out in October 1956 and 271 animals were found to be affected with tuberculosis. All these reactors were slaughtered and $381,750 compensation was paid to the farmers who were also allowed to retain the salvage value of the carcases. Due to this generous Government compensation, the dairy farmers were able to import healthy new dairy stock from Australia. This will be of great benefit to the industry in general and already there has been a noticeable improvement in the general health of the dairy stock in the Colony. Testing of the remaining cattle will be

carried out at six monthly intervals and any further reactors will be eliminated.

159. Tuberculosis is not a problem in the local cattle and the few tests that have been carried out have as yet failed to reveal a reactor. It is hoped in the near future to make a representative assessment of the incidence of tuberculosis in these cattle.

160. One outbreak of tuberculosis was diagnosed in a flock of local chickens in the New Territories.

161. During the year, 627 cases of tuberculosis in cattle and 152 cases in pigs were detected in the Colony's abattoirs.

(iv) *Anthrax.*

162. No case of anthrax was reported in animals in the Colony for the year, but one case in a buffalo from Thailand and one case in a bullock from the Chinese Mainland were found in the Quarantine Stations.

(v) *Foot and Mouth Disease.*

163. During the year 12 outbreaks of this disease were investigated. 11 of these outbreaks, involving 298 animals were spread throughout the New Territories, and one outbreak, involving cattle only, occurred on Lantao Island.

164. These outbreaks were for the most part isolated, self-contained and involved only a few animals. The outbreak in the Kam Tin Valley was the most severe and involved the greatest number of animals. Fortunately it was well under control by March, 1957 and had been completely stamped out by July, 1957.

165. Most cases of the disease involved brown cattle, but a few outbreaks in pigs and one outbreak in buffaloes were recorded. Pathological specimens from all outbreaks were sent to the Research Institute at Pirbright for typing. During the year 1956/57 only type "O" has been found in the New Territories but in the outbreak on Lantao Island, type "Asia I" was recovered. In the Lantao Island outbreak the source of infection was directly traced to Kennedy Town Slaughterhouse and as type "Asia I" is the prevalent type found there, its occurrence in this outbreak was explained.

166. The disease was very mild in the local cattle and in most cases individual recovery took place in 10 to 14 days. No fatality occurred. In pigs the acute stage of the disease was sometimes more severe, but the only fatal cases occurred in a litter of 3 days old piglets.

167. The disease continued to occur in the Quarantine Stations in cattle imported for slaughter and a total of 620 cases were detected. Of these animals, 332 were of Cambodian origin, 178 of Thai origin and 110 of Mainland Chinese origin. Samples were regularly taken from active cases and sent to Pirbright Research Institute for typing. Only type "Asia I" and type "O" were recovered.

(vi) *Rinderpest.*

168. No case of Rinderpest was reported from the New Territories or Hong Kong Island during the year, making the 7th consecutive disease-free year. However, one case was detected at the Quarantine Station in a buffalo from Thailand.

169. During the year 8,463 animals were inoculated against this disease.

(vii) *Ephemeral Fever of Cattle.*

170. This disease is widespread throughout the Colony during the summer months. This year the incidence was highest in July and August and 258 cases were reported in Chinese yellow cattle. The disease was for the most part mild in nature and no fatalities occurred. No case was reported in buffaloes. Ephemeral Fever represented almost 50 per cent of the total reported diseases of cattle in 1956/57.

(viii) *Swine Fever.*

171. 19 outbreaks of this disease were reported, involving 86 animals, 24 of which died. None of the animals in these outbreaks had been inoculated with Hudson strain lapinised Swine Fever vaccine.

172. 368 cases of Swine Fever were detected in the Quarantine Station.

173. During the year 14,500 pigs were inoculated with Hudson strain vaccine—an increase of 5,440 over the previous year.

(ix) *Swine Erysipelas.*

174. Only 6 cases were reported during the year all of which responded well to treatment.

(x) *Brucellosis of Pigs.*

175. Only 16 outbreaks of abortion were reported for the year, but as farmers are now readily recognizing the condition and selling affected stock, the incidence was probably much higher.

(xi) *Paralysis in Pigs.*

176. 57 cases of paralysis were reported, nearly all of which were associated with pregnancy, parturition or lactation. Paralysis sometimes occurs immediately after parturition but mostly at about the 5th or 6th week of nursing. In those cases associated with lactation, and in some associated with parturition, the paralysis appears to be due to a calcium deficiency and recovery often occurs following the subcutaneous injection of 50 c.c. of a 20% solution of calcium borogluconate daily for 3-4 days.

(xii) *Virus Pneumonia of Pigs.*

177. During the year, 211 outbreaks involving 423 animals were investigated. This disease remains an extremely serious problem to the pig keepers in the Colony and its attendant financial losses are considerable even when it occurs in a subclinical form. There is no method of immunization against the disease and no really effective method of treatment other than careful husbandry. An intensive campaign to educate the farmers in this hygienic approach has been carried out during the year. The pigs in Hong Kong are particularly susceptible to this disease due to the changeable weather and the extremes of climatic conditions encountered here.

(xiii) *White Scours.*

178. This is the most common complaint among piglets and during the year 374 outbreaks involving 4,358 animals were attended and treated. It is a disease of poor management, indifferent hygiene and bad dietetics complicated in many instances by bacterial invasion but fortunately responds well to treatment.

Improved Local Type Sow (Fa Yuen). Figure 1.

Mid White Sows. Figure 2.

Government Fish Ponds at Au Tau.

Fisheries Division Vessel No. 2.

(xiv) *Poisoning in Pigs.*

179. During the year 4 outbreaks of poisoning were reported involving 17 animals of which 7 died. All cases were found to be due to poisoning with insecticides of the Endrin, Malathione, Parathione type and in one instance the poisoning was proved to be deliberate and with criminal intent.

(xv) *Piglet Anaemia.*

180. The incidence of this disease has decreased considerably due mainly to advice from officers of the Department on management and to the provision by the Department of a suitable iron mixture for the prevention and treatment of the condition.

(xvi) *Hypoglycaemia.*

181. This is a metabolic disorder of baby pigs. During the year 5 separate outbreaks were attended, involving 37 piglets, four of which died.

(xvii) *Gastro Enteritis of Pigs.*

182. This is the commonest complaint in adult pigs and is due mainly to bad conditions of management and feeding. During the year 326 outbreaks of this nature involving 1,022 animals were attended.

(xviii) *Newcastle Disease of Poultry.*

183. This disease is not now the problem it was and only 12 outbreaks were reported for the year occurring mostly in small flocks. The improvement is due in great part to the increasing use of preventive inoculations against this disease. During the year, the Department imported for use in the Colony 2,262,500 doses of Ranikhet vaccine from Malaya and 822,330 doses of Weybridge "F" strain vaccine from Thailand. This is a total increase of 1,529,950 doses over last year. Officers of the Department inoculated 1,193,000 birds with the Ranikhet vaccine and issued a further 1,073,000 doses for use by the poultry farmers themselves. The "F" strain vaccine is easily administered to very young chickens by the "nasal drop" method and is issued to the farmers for their own use.

(xix) *Pasteurellosis of Birds.*

184. This disease appeared in chickens, ducks and geese and a total of 12 outbreaks were reported. In most cases, mortality was quite low if the outbreak was reported early.

(xx) *Salmonellosis of Birds.*

185. This disease is of considerable economic importance to goose farmers and three fairly large outbreaks were reported during the year. Deaths occur in the first 10 days of life and infection may be via the egg.

186. Salmonelosis infections of poultry were also present, many outbreaks being of a chronic nature.

(xxi) *Asian Leucosis Complex.*

187. As during last year, this disease was of great economic importance to the poultry industry but the farmers are now recognizing it and adopting drastic culling and segregation to prevent its spread. 10 outbreaks were reported for the year, all in local chickens.

(xxii) Rabies.

188. No case of rabies was reported in humans or animals in the Colony during the year. This is the first year that freedom from rabies has been Colony wide. There has been no case in the Urban Area for seven years and no case in the New Territories since November, 1955. This is a very satisfactory state of affairs, but due to the land border with its attendant hazards, vigilance cannot be relaxed if such conditions are to be maintained.

189. Due to the improvement in methods of immunization against this disease in dogs, the "Dogs and Cats Regulations" were amended and inoculation and tattooing of dogs is now compulsory every three years. Licensing is still compulsory annually.

190. During the year, 15,923 dogs were inoculated and licensed. Of these 6,366 were in Hong Kong and Kowloon and 9,557 were in the New Territories.

191. The Department maintains four observation kennels, two in the New Territories and two in the Urban Areas. These kennels are for the detention and observation of dogs and other

animals suspected of having rabies; for the quarantine of imported dogs, cats and other animals and for the impounding of stray animals. During the year 1,572 dogs, 116 cats, 21 monkeys, 1 lion cub and 2 orang-outans were admitted to these kennels for observation and 899 dogs, 7,022 cats and 5 monkeys were admitted as strays.

192. The Department also maintains a Rabies Control Unit which is a mobile team equipped with a special van and consisting of an inoculator-in-charge and three dog handlers. The duty of this unit is to catch and examine any dog not under proper control. If the animal is not licensed and tattooed, it is impounded until the owner is traced and not released until inoculation and licensing has been carried out. All unclaimed stray dogs are painlessly destroyed. The unit operates in all areas following the inoculation campaigns, particular attention being paid to the border regions.

193. During the year the Dog Control Unit caught 1,611 dogs, of which 1,060 were found to be licensed and subsequently released, 374 were returned to the owners after being licensed and tattooed and 177 strays were destroyed.

(B) Animal Husbandry.

194. During the year, the health of the livestock on all Government Agricultural Stations remained at a satisfactory level.

(i) *Pigs.*

195. During the year, the activities of the Division have been directed to improve the overall economy of pig raising in the Colony. Advice on husbandry, feeding and breeding problems has been given to the farmers and a supply of protein and mineral rich meat and bone meal was made available.

196. Improved Native Type pigs were bred and sold at nominal rates for distribution as foundation breeding stock.

197. Research was constantly carried on to ascertain the best conditions of management, the best feed utilization and the best type of pig for any given set of conditions.

198. On Castle Peak Agricultural Station, the herd of improved Native Type pigs, (Fig. 1) was maintained. Continuous selection for breeding was practised.

199. On Sheung Shui Pig Station, a Pedigree herd of Japanese Berkshire and Mid-White Pigs (Fig. 2) was established. These animals will provide a nucleus of pure breed exotic pig stock for experimental purposes and for eventual selective distribution in the Colony.

200. On Sai Kung Agricultural Station, a considerable amount of research work has been carried out. An extensive breeding trial using the local type pig was started and experimental controlled cross breeding using exotic and local animals was inaugurated. These experiments have already produced a great deal of valuable information but will be continued over a long period.

(ii) *Cattle and Buffalo.*

201. The Department maintains a herd of Yellow Cattle and Water Buffalo to provide working animals for the various Agricultural Stations.

202. The local animal is well suited for its purpose and is adapted to thrive on grazing and roughage. These animals are used practically exclusively for ploughing the paddy fields. Little or no selective breeding is practised.

(iii) *Poultry.*

203. A high grade flock of pure White Leghorn chickens was maintained at Castle Peak Agricultural Station. Selection for breeding in this flock, based on progeny testing under local conditions was continued and a very good type of bird is being established.

(C) Animal Quarantine, Dairies and Meat Inspection.

(i) *Quarantine Enforcement.*

204. The Department maintains three Quarantine Stations situated at Shek Wu Hui, Ma Tau Kok, and Kennedy Town for the holding, segregation and examination of large animals imported into the Colony.

205. The Animal Quarantine Enforcement Team undertakes the supervision of all livestock imported into the Colony for slaughter and the administration of the Quarantine Stations. All animals are escorted from their point of entry by land or sea to the Quarantine Stations where they are examined for

signs of disease. During the year, the Quarantine Enforcement Team dealt with 77,939 cattle, 730,567 pigs, 794 sheep and 11,266 goats, detecting 620 cases of Foot and Mouth disease, 368 cases of Swine Fever, 1 case of Rinderpest and 2 cases of Anthrax.

206. The Animal Quarantine Enforcement Team also enforces the prevention of cruelty to animals under transport and during the year, obtained two convictions for this offence, the offenders being fined $200 each.

(ii) *Importation of Animals.*

207. During the year, in addition to the animals produced locally, 73,371 cattle, 503,627 pigs, 11,266 goats and 794 sheep were imported into the Colony for slaughter.

208. This represents a decrease of 17 per cent in cattle imports and a decrease of 32 per cent in pig imports as compared with the previous year.

(iii) *Origin of Imports.*

	Pigs.	*Cattle.*	*Sheep.*	*Goats.*
Mainland China	470,603	51,145	794	11,266
Cambodia	1,399	3,847	—	—
Thailand	—	18,361	—	—
Taiwan	31,625	—	—	—
Australia	—	18	—	—

The above table shows decreases of 25 per cent in cattle imports and 23 per cent in pig imports from Mainland China as compared with 1955/56. However, the importation of pigs from Taiwan increased by 167 per cent: the import of pigs from Cambodia commenced this year and as stated, local production increased considerably.

209. In January 1957, a trial importation was made of 18 head of Australian Range cattle for slaughter. These animals were well received by the local meat trade.

(iv) *Abattoirs.*

210. The Department controls the meat inspection and quarantine in the New Territories Abattoirs at Yuen Long and Taipo. During the year, 3,668 cattle, 63,375 pigs and 106 goats

were dealt with in these abattoirs. The average monthly total of animals slaughtered has risen from 130 cattle and 3,358 pigs in 1955/56 to 305 cattle and 5,281 pigs this year. During the year, 25,330 lbs. of meat unfit for human consumption were condemned in the two abattoirs.

(v) *Dairies.*

211. During the year, tuberculin tests were carried out on all the dairy cattle in Kowloon and New Territories and tuberculosis amongst those cattle has now been eliminated.

212. Raw milk sampling was carried out by officers of the Department to ensure that the local standards of hygiene were maintained.

213. The Division maintains a register of all licensed dairies and undertakes the tattooing of all dairy animals for identification purposes.

(D) Veterinary Inspection.

214. The Division is responsible for the certification of animals, birds, and products of animal origin intended for export. During the year, certificates for health for 3,976 animals and 170,777 birds were issued. In addition, certificates of soundness were issued for a total of 10,586,941 lbs. of animals products. The fees collected for this service and paid to the general revenue totalled $19,032.

(i) *Statistics of Veterinary Inspection.*

215. *Animals:*

Dogs	207
Cats	17
Monkeys	1,472
Horses	7
Cattle	7
Goats	15
Pigs	5
Mis. Zoo Animals	126
Turtles	2,120

Birds:

Cage birds	170,502
Pigeons	31
Poultry	244

Animal Products:

Bovine hides	2,078,921	lbs.
Equine hides	462,084	„
Deer skins	46,759	„
Sheep skins	15,597	„
Hog bristles	48,547	„
Sheep wool	38,769	„
Raccoon hair	2,291	„
Mis. animal hair	29,381	„
Deer horns	392	„
Bird feathers & down	68,801	„
Hide cuttings	1,901,317	„
Cattle bones	784,000	„
Cattle horn & hoof waste	224,715	„
Bone meal	4,880,960	„

Food Products:

Dried marine products	3,482	lbs.
Conch meat	925	„

PART 5

FORESTRY DIVISION

Officer-in-charge: Mr. A. F. Robertson, B.Sc. (Edin.)—
Forestry Officer.

Introduction

216. Over three quarters of the land area of Hong Kong is steep and mountainous; the natural vegetation is predominantly grass with scattered areas of scrub and scrub forest in the remote and inaccessible areas. Most of the hill land is suitable for forestry and large scale afforestation is urgently required to check soil erosion, which is prevalent in many areas, and to conserve water supplies and prevent serious flooding. Briefly the policy of the Department is to afforest the waste hill lands for these reasons and to produce timber and fuel for local use, both by the formation of government forest reserves and plantations and by the encouragement of village forestry.

217. The Forestry Division is organized into five district branches covering the New Territories. In each district a Forestry Supervisor is responsible for all branches of forestry work including afforestation, forestry lot work, amenity planting and protection. The total area of forest reserves is 14,136 acres including 4,524 acres of established plantations and areas under regeneration operations. Most of the forest reserves are in the Colony's water catchment areas.

Afforestation

Seed Supplies.

218. A total of 1,014 lbs. of pine seed was obtained by local collection and in addition 2,000 lbs. were obtained from China through a contractor. In recent years there have been restrictions on the export of pine seed from China and it has been necessary to rely entirely on local collection. This year, with a record amount collected locally and a large amount imported, it will be possible to start a small stock pile of seed in case of bad seed years in the future. Seed of other species was collected

Grafted Fruit Trees, Taipo Nursery.

Pineapples do well in Hong Kong.

Tai Lam Forest Reserve—Afforestation of Severely Eroded Land.

Casuarina Stricta—2 Years Old and Already 25' - 30' Tall.

locally except for small quantities of seed obtained from abroad for trial purposes.

Nursery Work.

219. The main nursery at Tai Lung supplied over a million plants during the year. This nursery is gradually being equipped to produce high quality nursery stock of various kinds for afforestation, amenity planting and sale to the public. Small temporary nurseries are also maintained in the planting areas to supplement supplies, especially in areas where there are no roads for transport of plants from the main nursery.

Plantations.

220. A total of 1,065 acres of new plantations was formed, thus exceeding for the first time the target of 1,000 acres per annum. Very extensive replanting of areas of failure in previous years' plantations was also carried out with equal success, and most of these areas are now well stocked. The high standard of success of the work is certainly due in part to improved planting methods and the growing skill and experience of the senior and subordinate staff.

221. The following is a brief account of work carried out in the main afforestation areas: —

(i) *Tai Lam Forest Reserve.* (20 compartments = 3,269 acres).

222. Replanting of pine was done in the heavily eroded areas of compartments 5, 6, 7, and 8 and these areas are now fairly well established. As nearly all the eroded areas have now been planted, it was possible to start planting grass covered areas and extensive pine plantations were formed in compartments 16 and 17 both of which are only very slightly eroded. The pine plantations in compartments 1, 2 and 8 were also extended. The results of pine planting were much better than in previous years largely because of the better quality sites, so that repeated replanting, which had to be done in the eroded areas, will not be necessary. New areas of *Casuarina equisetifolia* and *Tristania conferta* were also planted in compartments 16 and 17 and small trial plots of various species were planted in a number of compartments. Altogether 322 areas of new plantations were formed.

(ii) *Shing Mun Forest Reserve.* (23 compartments = 6,025 acres).

223. A very heavy replanting programme was carried out in the pine plantations of compartments 2, 6, 13 and 14, parts of which were still poorly stocked at the beginning of the year. The pine plantations in compartments 13 and 14 were then extended up to the path which runs across the south face of Tai Mo Shan at about the 1,800′ contour. A new plantation of *Casuarina equisetifolia* was formed in compartment 16 and small trial plots of various species were planted in compartments 12 and 17. A total of 161 acres of new plantations were formed. 50 acres of pine were thinned in older plantations in compartment 11.

(iii) *Kowloon Hills Forest Reserve.* (7 compartments = 1,818 acres).

224. Small areas of *Casuarina equisetifolia* were planted for erosion control in compartments 3 and 4; *Casuarina* and *Eucalyptus* areas in compartment 7 were replanted and interplanting of *Melaleuca leucadendron* and *Cinnamomum camphora* was also done in this area.

(iv) *Pat Heung Forest Reserve.* (11 compartments = 2,133 acres).

225. In this area, which will eventually form part of the indirect catchment area of Tai Lam Chung reservoir when the catchwaters have been completed, the compartments have generally been divided into an upper and a lower portion. Pine is being planted in the upper portions, which are generally steep and exposed, while in the lower portions, which are sheltered with rather better soils, a wide variety of broadleaved and coniferous tree species both indigenous and exotic, is being planted. A great deal of replanting was done in the pine areas of compartments 7, 8, 9 and 10 which were first planted in 1955 and 167 acres of new pine plantations were formed in compartments 5 and 6. In the lower areas of compartments 6, 8, 9 and 10 a total of 120 acres of 25 different species were planted. This includes fairly large areas of *Acacia confusa, Tristania conferta, Melaleuca leucadendron, Tutcheria spectabilis, Eucalyptus citriodora* and *Pinus insularis* and small trial plots of the

remaining species. A considerable amount of replanting was also done in the 1955 plantations.

(v) *Tai Po Kau Forest Reserve.* (10 compartments = 693 acres).

226. 176 acres of pine were planted in compartments 4 and 5 and extensive replanting was done in the previous years' pine areas in compartments 6, 7 and 8. The existing plantations of *Cinnamomum camphora, Tristania conferta* and *Castanopsis fissa* in compartments 1 and 10 were replanted and extended by a further 3 acres of new planting.

(vi) *Shap Long Forest Reserve.*

227. Afforestation of this area, which comprises the catchment area on Lantao Island for the water supply of Cheung Chau, was started in May and 116 acres were completed, the main species being *Casuarina equisetifolia* on the grass or shrub areas and pine on the eroded slopes.

Forestry Lots

228. The scheme of assistance in the planting of village forestry lots continued to expand. The object of this scheme is to establish village plantations to provide a quick return of poles and small timber for the construction of farm buildings, wood for fuel and eventually timber for sale and also to protect the soil and conserve water for agriculture. The villagers are generally ignorant of the principles of forestry and the first requirement is to teach them sound forestry techniques and show them that a good financial return can be obtained from plantations. For this purpose the Forestry Division carries out experimental work in order to find tree species suited to the needs of village forestry; model plantations have been made to demonstrate forestry methods to the villagers and under the forestry lot planting scheme, small trial plantations are established at Government expense on the village lots in order to prove to the villagers the value of properly managed plantations.

229. During the year, 309 acres of trial plantations were planted on 29 forestry lots and all previous years' plantations were tended and replanted. Most of the work was done in the Sai Kung and Castle Peak areas where interest in the scheme is spreading but there have been inquiries from other districts

where preliminary inspection and mapping of the lots have been done. Pine was the main species used but *Casuarina spp.*, *Tristania conferta*, *Castanopsis fissa*, *Acacia confusa* and *Eucalyptus spp.* were also planted on a small scale. Pine is not an ideal species for village forestry as it does not coppice and is easily killed by fire: moreover it does not appear to be suited to some of the Sai Kung forestry lot areas.

Amenity Planting

230. The planting and tending of roadside trees in Kowloon urban area was transferred to the Gardens Division from 1st July, leaving the Forestry Division to concentrate on amenity work in the New Territories. Approximately 16,000 trees and shrubs were planted for amenity purposes on roadsides, in school compounds, army camps and cemeteries.

Protection

Forest Offences.

231. A total of 89 persons involved in 47 court cases were convicted of forestry offences. None of the cases was serious and the damage to the forests was insignificant.

232. The number of forest offences has been declining gradually over the past few years until it has now reached a very low level as can be seen from the total numbers of convictions for the last five years:—

1952 - 53	1,060	persons
1953 - 54	602	,,
1954 - 55	507	,,
1955 - 56	203	,,
1956 - 57	89	,,

The reasons for this extraordinary reduction are not quite clear as there are a number of conflicting factors at work. On the one hand, arrests are no longer made in the more trivial cases, complete protection is no longer practised except in the forest reserves and catchment areas and the number of staff engaged purely on protection work has been reduced. It might appear, then, that the reduction was brought about by a general relaxation of protection measures and that the vegetation was suffering as a result. On the other hand however, the forestry staff is now spread over a larger area of the New Territories, the senior staff has been increased and protection patrols

regularly cover a wider area than previously. It can definitely be established therefore that there is little illegal woodcutting being done and few undetected offences. Whereas this may partly be due to the deterrent effect of regular patrols it is also obvious that there is less incentive to steal from the forest, and this is surely a reflection of the fact that the large refugee population, which was at first in such hard circumstances, has now been absorbed into the community and has found employment in the Colony's rapidly developing industry. Another reason may be the increasing popularity of kerosene fuel for domestic purposes in place of firewood.

Fire.

233. During the fire season from October to March moderate and high fire risks prevailed as there were few wet periods. On the other hand there were very few days of extreme fire risk. A total of 249 fires was reported: only 30 of these occurred in forest reserves and only 12 in planted areas, the latter damaging approximately 62 acres of plantation. In some cases where the trees were very small they were killed outright, but in most cases where the trees were more than 2 feet tall many of them were only scorched and will recover. Most of the fires were extinguished very promptly by the forestry staff and only 2 of the fires in plantations extended over more than 10 acres. In the case of one, which occurred in compartment 13, Shing Mun, there was quite a strong wind blowing and although the fire was extinguished within an hour and 20 minutes of the first report, it had spread very rapidly and destroyed 13 acres of last year's pine plantation in that short time. The other serious fire which burned 23 acres of pine and *Eucalyptus* plantations about 3-4 years old in compartment 15, Shing Mun, broke out at 11.15 p.m. and there are strong reasons for believing that it was maliciously started. Fires do not normally break out so late at night and it took longer to round up a fire control gang, which did not arrive at the scene of the fire till after midnight by which time most of the damage had been done.

234. In the case of fires occurring in forest reserves some attempt is always made to ascertain the cause of the fires and it has been found that nearly all fires are started accidentally.

Common causes are carelessly discarded cigarette ends, picnic fires, burning of weed growth on paddy land, joss sticks left by grave worshippers, army exercises and firing practice. It is commonly held that hill fires are started intentionally by villagers in order that the ashes may wash down the hillsides and fertilize their fields, but although several hundred fires have been investigated in the last 2 years, this cause has never been established and is most unlikely in all but a few cases.

235. The fire control measures introduced in 1955 have proved most satisfactory and the systems of fire hazard estimating, spotting and reporting fires cannot be much improved. If fire damage is to be further reduced more roads and paths must be made and light transport obtained in order to cut down the time between the first report of a fire and the arrival of the fire control gang. Most important of all is the need for more public understanding and co-operation to avoid starting fires carelessly. A publicity campaign was carried out during the year using fire posters and danger notices but there is still much to be done in this respect.

236. A new fire lookout was erected at compartment 16 Tai Lam Forest Reserve, fire barriers were maintained and a number of new barriers made in danger areas.

Forest Pests.

237. Only very slight damage from pests was recorded: grasshoppers caused some defoliation of *Casuarina* in Pat Heung forest reserve and pine defoliating caterpillars appeared in small numbers in one or two areas.

Other Injuries.

238. A few species in the nursery suffered slight frost damage in February.

Communications and Buildings

239. A total of approximately 5 miles of new forest paths was made in Pat Heung, Tai Po Kau, Tai Lam and Shap Long forest reserves, and all existing paths were maintained. The access road at Pat Heung forest reserve was extended up to one mile in length. This road will eventually link up with the P.W.D. road in Tai Lam forest reserve.

240. A very large programme of building construction and maintenance work was carried out departmentally. At Tai Lung nursery the office, lavatories and glass house were completed, an inflammable store and a garage were built and the water tank was extended. The staff quarters at Chai Wan, Stanley, and at the 6½ milestone on Sha Tin Road which were dilapidated military shelters were completely renovated and brought up to habitable standards. Also at the 6½ mile an uninhabited military shelter was converted into a forest ranger's quarters. At Chuen Lung an old Nissen hut was purchased from the Army and extensively repaired and repainted. The temporary Nissen hut at Tai Lam Chung, which was in the area to be flooded, was moved to a permanent site in compartment 17 and re-erected and a store-room and bathroom added. A new district office and store at Castle Peak and a supervisor's quarters at Sai Kung were also completed. In addition to these major construction and repair jobs a number of minor alterations and repairs to other buildings were done.

Timber Trade

241. The timber trade is entirely in the hands of private firms without Government restrictions. A summary of imports and exports of timber is given in Appendix 1(K). Export means re-export of imported timber as there is no export of locally grown timber.

242. The export trade of graded sawn timber to the U.S.A., Australia, the United Kingdom and other high class timber markets continued to expand during the year. The following figures show the approximate amounts of sawn timber in tons exported to those countries since 1953:—

1953	1,100	tons
1954	2,300	„
1955	5,600	„
1956	9,300	„

243. This export trade depends on imports of logs, which are obtained almost exclusively from British North Borneo and Sarawak, the main species being *seraya* and *keruing*. Because of abundant cheap labour and a ready local market for low quality timber Hong Kong is able to import low grade logs from which, by intensive selection, the high quality export timber is cut, the remaining poor quality timber being disposed of locally.

In this way the Hong Kong exporters can compete very favourably with exporters in Borneo, Malaya, and elsewhere in the region. During the year 4 timber graders returned to the Colony after training in Singapore, thus enabling a number of firms to grade their export timber more accurately. One firm opened a large well-equipped modern sawmill at Tsuen Wan to deal with export orders. The Forestry Division continued to give help and advice to the local exporters and also inspected timber and issued Certificates of Freedom from Live Borers in the case of timber consigned to foreign markets which require such certificates.

Research and Education

244. Investigations and small scale experiments in silviculture continued during the year, among the most important being species trials. Trial plots have now been established on many different sites throughout the forest areas. At first only a small number of trees of each species are planted and usually fertilizer trials are carried out at the same time. If good results are obtained, larger plots are established on a wider range of sites. Many of the tree species under trial are indigenous trees or have been long introduced in the Colony but have not been tried for afforestation; others are newly introduced species which are likely to be suited to the soils and climate of the Colony. Unfortunately with tree species, which take a long time to mature, early results from the trial plots cannot be expected and indeed may be misleading as trees which start badly may do well later on and *vice versa*. It appears from the trial plots that there are a considerable number of species which may be suited to the better soils often found in the lower parts of valleys, but which only form a small proportion of the sites available for forestry. There are, however, comparatively few species suited to the poorer exposed sites on the higher slopes and ridge tops, which account for a very large proportion of the planting sites, and pine must therefore remain the main species planted for some time to come. Promising species which are now being planted more widely on the poorer sites are *Tristania conferta*, *Casuarina stricta* and *Eucalyptus citriodora*. *Casuarina stricta* appears to be more suitable than *Casuarina equisetifolia*, as the latter is occasionally damaged by frost on the higher sites and is regularly attacked

by the cottony cushion scale insect, while the former seems to be immune to both these forms of injury and is, in addition, more vigorous, faster growing and straighter.

245. Experiments have also been done on planting methods. It has been found, for example, that *Casuarina* and *Tristania* can be planted bare rooted in favourable weather with fair success. Much remains to be done to determine the best techniques for each species. A few plantations are approaching the thinning stage and thinning and pruning experiments have been started.

246. As regards education, it is obvious that in a small Colony with a large population there is need for public understanding of the reasons for carrying out afforestation and particularly of the injuries to which forests are exposed through carelessness. It was thought that an Annual Tree Planting Day on which local villagers and school children would meet and plant trees would be useful in this respect. Early in the year a start was made: in each forest district a Tree Planting Day ceremony was held attended by village representatives and school teachers. At each ceremony a member of the forestry staff gave a short explanatory talk, forestry films were shown and then trees were planted.

Miscellaneous

247. At the 1957 Agricultural Show a Forestry exhibit was prepared including exhibits, models and photographs illustrating various aspects of forestry work.

248. The Division continued to fell and prune trees and to issue permits for the clearing of building sites, wood from these sources being sold by tender.

249. The sale of decayed and over-mature village camphor trees in the New Territories was continued and a total of $88,785.00 was obtained for village improvement works in 19 villages.

250. Christmas trees were supplied to the public as usual and a record total of 1,458 trees were sold.

251. A survey was made of the extent of forestry work by the Lantao Development Co. This company was formed in 1954 and to date 293 acres have been planted mainly with Hoop Pine (*Araucaria cunninghamii*).

PART 6

FISHERIES DIVISION

Officer-in-charge: Mr. W. D. Orchard—Fisheries Officer.

I — Marine Fisheries Section

Introduction.

252. The Division is concerned with fisheries administration and extension work. Promotion of mechanization; training of fishermen for Marine Department certificates of competency as masters and engineers; together with the introduction of better fishing methods, are the main considerations on the marine side. The fresh-water and oyster culture section maintains close contact with local pond fish and oyster farmers, to whom advice is given and, where possible, improved methods of culture are demonstrated.

253. Close liaison is maintained with the Co-operative & Marketing Department (which administers the Fish Marketing Organization), the Fisheries Research Unit of the Hong Kong University, and the Marine Department.

REVIEW OF FISHING ACTIVITIES.

Trawlers.

254. As in the previous year, mechanized deep sea junk trawlers did very well. The owners of these junks continued to extend the range of their operations and, in March, the most enterprising of them started fishing on new grounds situated 170 miles South-west by South of Hong Kong. Using Japanese-type pair trawls, together with combination warps and protectively bound wire foot ropes, they were able to fish deeper water than before—working often in depths of 75 fathoms and more. Results obtained on the new grounds were particularly good.

255. During the summer months when there was usually insufficient wind to permit efficient trawling and the added threat of typhoons, all the sail-driven junk trawlers spent most of their time in port carrying out repairs to the boats and gear. The main season for these junks (*i.e.* the "North-east

Monsoon" period) started with the Mid-Autumn Festival, which in 1956 occurred on the 19th September. For the following three months both the so-called "deep sea" junk trawlers, which usually fish in 30 to 40 fathoms, and also the inshore junk trawlers, did quite well. After that however the weather was unfavourable and the best grounds were inaccessible; all classes of sailing trawlers then experienced hard times. Much of their fish was sold in China mainland ports.

Long Liners.

256. The large long liners, all of which are mechanized, had an excellent year. Interference with the lines from sharks and puffers was less than usual. Even during October to November when the fresh North-east winds usually make lining operations from the small sampans difficult, trouble was generally experienced only in the early mornings and late evenings. During March some of these boats were working East of Swabue—further away than they had ever operated before—and good hauls of Grouper and large Golden Thread were taken on the new grounds.

257. The small and medium sized mechanized Conger Pike long liners had a good year except during the months of October and November when, on account of the fresh North-east winds, they had to move from their usual grounds near the Ladrone Islands and fish the more sheltered but less productive waters on the East coast, towards Ping Hoi.

258. The small long liners that fish mainly for Head Grunt, Croaker and Hair Tail had a very bad year. Poor catches of Hair Tail and Head Grunt; interference from sharks in the inshore waters; occasional shortages of bait; and, the need during times of bad weather to fish in nearby sheltered waters, all tended to make life most difficult. Furthermore, during their main season (*i.e.* the summer) many of these craft fished the same grounds as those over which the shrimp boats were trawling, with the unavoidable result that their set long lines were often swept away by the trawlers.

Purse-Seiners.

259. These boats had a poor year. The main season started in April with the Anchovy and Round Herring operations yield-

ing disappointing results. The Carangoid and Green Pilchard seasons which followed were only a little better. Mechanized purse seiners were forced to turn to using hand lines for White Herring and long lines for Golden Thread during the daylight hours, in addition to their normal "bright light" purse seining at night, to make both ends meet. Towards the end of the summer conditions fortunately improved as more Carangoid and Anchovies were caught.

260. As was the case in the previous year, the Golden Sardine season was exceptionally bad.

261. During October and November a number of the mechanized purse-seiners worked nylon gill nets for Yellow Croaker. Their catches were disappointing but, fortunately, the prices obtained were quite good.

262. The unexpected appearance of good shoals of Green Pilchard and Anchovies, near the Lema and Ling Ting Islands in November and December, brought out the mechanized boats in force. Sailing purse-seiners however were unable to venture out so far, owing to the unfavourable winds, and these boats had to continue fishing closer in after Anchovies and Long Jawed Herring. In the rocky Sai Kung area of the New Territories, the sailing purse-seiners turned to working traps during the slack seasons. These were used for the capture mainly of Grouper, Sea Bream, Grayfish and Sea Snails.

263. Despite the fresh to strong North-east winds and sea fogs which prevailed much of the time from January to March, the larger mechanized purse-seiners once again engaged in off-shore fishing for Mackerel Scad. Until quite recently this fishery had only been exploited by the larger Pa T'eng boats. In this connexion it is interesting to note that whereas the largest of the purse-seiners had not previously exceeded 33 ft. in length, a new seiner of just over 47 ft. overall (with a 60 h.p. diesel engine) was completed at the end of the year.

Pa T'eng.

264. Throughout the summer, most of the mechanized Pa T'eng boats successfully went shrimp beam trawling. The

sailing vessels started off by using nylon gill nets for White Herring and Korean Mackerel, then went on to purse seining for Anchovies.

265. From mid-September onwards all the Pa T'eng boats worked gill nets for Yellow Croaker but, as in previous years, catches in the vicinity of Hong Kong were very poor. Many of the junks proceeded towards Ping Hoi where the fishing was better and, furthermore, they did not have to put up with the usual "Pick pocket" activities of the smaller purse seine net fishermen who have a habit of entering an area once it has been encircled by the Pa T'eng nets, and making a quick haul to steal the fish.

266. At the end of November, the Pa T'eng fishermen started using their large purse seine nets, near Ma Mei Chow and the Ladrone Islands, for Mackerel Scad. It was however a poor season because the schools of fish were not as plentiful as usual in what are normally regarded as the Hong Kong grounds. Later, in February and March, both Mackerel Scad and Golden Sardine were found to be more abundant further up the East coast, off Ping Hoi and Swabue, and many Hong Kong based boats naturally proceeded there after them.

Big Tail Junks.

267. The Yellow Croaker season, main fishing for these Tai O based gill net boats, was once again an almost complete failure. This was probably due to a change in environmental conditions that is gradually taking place. The fishermen themselves however felt that the activities of the much expanded fleet of mechanized shrimp trawlers, concentrated on the Yellow Croaker grounds, in no small measure tended to break up the shoals.

268. Fortunately reasonable quantities of White Herring, Macao Sole, White Pomfret, Thread Fin, Croaker and Mackerel were periodically taken at other times of the year. These results were only made possible by the widespread introduction of new nylon monofilament gill nets (in place of the former ramie nets) and both the financial outlay and the fishing effort

exerted was considerable. All-in-all these boats had a very poor year.

269. The wind-driven "Big Tail" junk owners complained that with so many other types of boats now using nylon gill nets as a supplementary method of fishing, the competition is depriving them of their traditional method of making a living.

Shrimp Trawlers.

270. The large increase, as compared with last year, in the number of mechanized boats engaged in shrimp trawling resulted in rather higher total landings but with a much reduced catch per unit effort. These were clear indications that overfishing, on the existing grounds, had started taking place. No definite statistics in respect of shrimps and prawns were available, as these catches did not have to be sold through the Government Fish Marketing Organization. It was however known that prices obtained were slightly higher than during the previous year. This was due to the newly developed export trade in quick frozen prawns.

271. As opposed to the rest of the fishing fleet which is almost entirely owner-operated by the fishermen themselves, many of these shrimp trawlers were owned and financed by persons from outside the industry. From time to time a number of this category of vessels were temporarily laid-up as, due to poor catches, income did not cover expenses.

272. Although the area of operations covered by the shrimp trawlers was extended, both to the East and West, catches per boat were low. Even during the exceptionally long main season summer trawling for "medium size" prawns (which this year went on until November—instead of finishing in September), many of the bigger shrimp beam trawlers combined together and went pair trawling for fish, while the smaller shrimp boats switched to fish collecting.

273. Starting in December, the slack season for prawns, many of the shrimp trawlers went over to purse seining for Mackerel Scad, with fairly good results.

274. Immediately after the Chinese New Year, which occurred on the 31st January, all the shrimp boats went around to Tap Mun, in Mirs Bay, for the annual large White Shrimp

fishery. Good hauls of both shrimp and fish were taken with the "sharp tail" beam trawl nets. Fishing operations were carried out both around Tap Mun and between Au Tau and Swabue.

Fishing Community and Fishing Vessels.

275. A record of the number and type of fishing vessels in port over the Chinese New Year, together with an estimate of the total fishing population (including women and children) as at that time, is contained at Appendix I (R).

Analysis of Catch.

276. An analysis of landings of the most important species of fish, and figures for the same species during the previous year, are set out at Appendix I (Q).

Mechanization.

277. During the year the mechanized fleet increased from 968 to 1,524 vessels, an increase of 629. Details as to the number of vessels of each type that were mechanized, are recorded at Appendix I (S).

278. Brief particulars relating to the engines installed are contained in Appendix I (T).

279. Although the 1,524 mechanized vessels comprised only 22.5% of the whole fleet (6,756 vessels), the landings from these vessels accounted for 60.27% (420,030 piculs) of the total quantity (696,846 piculs) of fish sold through the Fish Marketing Organization. The landings by the three broad categories of power driven vessels, together with figures for the previous year, were as follows:—

	1956/57 (piculs)	1955/56 (piculs)
Trawler Company Vessels	64,701	103,146
Power Driven Native Craft	341,668	283,904
Foreign (Japanese Landings)	13,661	6,155
Total (all mechanized vessels)	420,030	393,205

Fishing Boat Development.

280. The appointment, in August, of a Craft Technician to the regular establishment of the Fisheries Division made it possible to take a much closer interest in the work going on in the junk building yards than had previously been possible.

281. The Craft Technician's first assignment was to study local construction methods, which he did by following the progress of a deep sea "Ha Kau" type junk trawler then being built at Shaukiwan. He was able to assist the builder in preparing four sectional templates in respect of this vessel. These were satisfactorily used later to produce a similarly shaped sister trawler, with more or less the same under-water body lines.

282. Towards the end of the year, the Craft Technician took measurements and prepared a lines plan from a newly constructed multi-purpose inshore junk trawler, with a more advanced hull form than usual, that had been built in a primitive yard at Aplichau, Aberdeen. A reproduction from this drawing is retained at Appendix 2. This drawing was prepared at the request of the junk owner and the builder, both of whom expected that after a period of operational fishing they would want to produce another vessel of exactly the same shape. If the order for a second vessel is in fact placed, the builder—who cannot himself fully understand the drawing—will employ a master boat builder to supervise the work. (This is what had been done in the case of the new little boat, mentioned later in this report, built for the Fisheries Division in the same native yard).

283. A total of 318 new power driven fishing boats were referred by the Fisheries Division to the Marine Department for licensing during the year. (This figure does not include the number of newly built sailing craft that were also licensed no record of which is kept by the Division). Of the 318 new mechanized boats, all but 10 (four purse-seiners and one small long liner built in China, four shrimp trawlers and one small long liner built in Macao) were constructed in the Colony. A consolidated summary containing brief particulars regarding

these vessels, together with totals for the previous year, is recorded below:—

Newly Built Fishing Boat Hulls Mechanised During 1956/57

Type of Vessel	No. of Vessels	Capacity (in piculs)	Main Engine Horse Power	Cost of Wooden Hulls
Deep Sea Trawler (Modified Type).	2	3,982	228	$ 320,000
Deep Sea Trawler	2	3,793	186	91,000
Inshore Trawler	29	21,054	1,746	268,850
Shrimp Trawler	39	22,687	2,352	283,650
Big Long Liner	1	1,305	72	30,000
Med. Long Liner	19	11,327	854	167,750
S. Long Liner	131	25,899	2,078	411,138
Hand Liner	8	2,487	151	29,900
Pa T'eng	3	4,069	216	68,000
Purse-Seiner	66	20,545	1,715	306,396
Gill Netter	8	2,481	211	28,900
Fish Collector	10	4,119	417	56,800
Total	318	123,748	10,226	$2,062,384
1955/56	156	57,367	4,672	1,035,384
Comparison	+160	+ 66,381	+ 5,554	+$1,027,000
	(+101%)	(+116%)	(+119%)	(+99%)

Note: In all 629 vessels were actually mechanized during the year; the other 311 registrations consisting of former sailing craft into which engines were installed.

284. The two deep sea trawlers of modified type, mentioned above, were built by the leading local trawler fisherman with financial assistance from the Fish Marketing Organization of the Co-operative & Marketing Department. This pair of wooden hulled 80 ft. vessels are a compromise between the native junk and the Japanese type trawlers. Instead of using an ordinary native trawl, the skipper-owner has gone over to the more modern Japanese trawl gear. Two Shantung Chinese fishermen, with previous experience of the new gear, are employed on the vessels. At the end of the year these boats were engaged in working-up trials. This development, un-

doubtedly the most important to date, has aroused much interest.

285. More detailed comparative data concerning costs, capacities and engine horse-power installed etc., in respect of the 318 new mechanized vessels is contained at Appendix I (V).

New Fisheries Division Boat.

286. The Chief Naval Architect of the Food and Agricultural Organization had visited Hong Kong in October, 1955. Following his departure, a local naval architect had been engaged as an outside consultant to follow up the F.A.O. suggestions for the construction of a new boat. Detailed plans and a specification were prepared. Financial authority to proceed with the construction was received just before the beginning of the year now under review.

287. The new boat, a wooden inshore fishing craft of approximately the same size as the existing semi native-type Fisheries No. 1 but with a greatly improved hull form and embodying many other changes, was constructed in a primitive junk building yard. Contrary to the usual practice in native yards whereby fishing craft are built without any plans by traditional rule of thumb methods, in this case the lines were first lofted out and sectional templates prepared from which the desired hull shape was then carefully produced.

288. The ceremony of launching Fisheries No. 2 "Yuen Ling", was performed by the daughter of the Assistant Fisheries Officer (Marine), after whom the boat has been named. A large gathering of fisherfolk, officers of the Government Marine Department and other friends who had helped were present. In accordance with local custom the young lady was required to hammer in the gold and silver nails which formed the "eyes" of the boat. She then removed the lucky red papers which up until that time had concealed the vessel's name and, amidst a burst of fire crackers, the boat went down the slip.

289. Although with technical guidance and supervision the builder had made a really good job of constructing the boat, the proper lining-up of the engine to the fine limits specified presented quite a problem for the little native engineering yard at Aplichau, Aberdeen, which did the installation. This took

a long time to complete but both the engineer and staff of the Fisheries Division benefitted by the experience.

290. A drawing which illustrates the improved hull form of Fisheries No. 2 as compared with that of the original Fisheries No. 1 is retained at Appendix 3.

291. The curved stem which provides a fine entrance and is economical to build, together with the excellent native method of edge-fastening, were both retained in Fisheries No. 2. For the rest of the construction details, however, this boat was predominantly of European build. The main departures were the addition of a wheelhouse, the fitting of a quadrant and chain steering, together with the provision of a solid knee high bulkwark instead of the usual native portable bulkwark and surrounding catwalk. Also, as the new boat was built on frames—instead of the customary large number of bulkheads which sub-divide the body of the native craft into numerous small compartments—it was possible to have a fixed deck with a good camber on it, instead of a deck consisting entirely of flat hatch covers; thereby doing away with all the wasted space normally taken up with both logitudinal and transverse scupper channels while, at the same time, making maximum use of the interior of the boat.

292. At the end of this year, no less than twelve local fishermen had copied the idea of incorporating wheelhouses in their newly built craft. Another interesting development has been the gradual disappearance of the large native-type wooden sailing rudder and the introduction of smaller steel rudders instead. Eight owners of mechanized inshore boats have gone a step further and fitted steering wheels, with the more modern chain or cable and quadrant steering arrangements, as in Fisheries No. 2.

Voyage in Commercial Trawlers.

293. With the consent of the company concerned, the Assistant Fisheries Officer (Marine) and the Craft Technician went to sea in a pair of British registered steel trawlers. It was intended that the first of these two officers should study the Japanese method of pair trawling and, at the same time, see to what extent the local Chinese crews had benefitted from the training received from the Japanese fishing instructors employed

by this company. The Craft Technician was sent to study the ships, their behaviour and seaworthiness, with a view to making recommendations for the construction of a wooden hulled distant-water fishing vessel which could be built in a junk building yard for the fishermen to copy.

294. South-east of Hainan Island the two trawlers were caught in the very centre of typhoon "Charlotte" and received a most severe buffeting. This resulted in the Craft Technician being privileged to study the behaviour of his particular trawler under the worst possible conditions. Unfortunately, however, no actual fishing operations were carried out because the two vessels parted company during the typhoon and, as only the senior ship carried wireless, contact could not be renewed. For nearly 72 hours it was feared that the junior ship, with the Craft Technician on board, might have been lost. Fortunately this was not the case, and both ships returned to Hong Kong independently.

Fishing Investigations.

295. The Fishing Master, by courtesy of the Fisheries Research Unit of the Hong Kong University, was able to use the F.R.V. "Alister Hardy" to test a Japanese-type otter trawl which had been fitted with round wooden bobbins and circular rubber discs on the foot-rope. These experiments showed that it was possible, by utilising these fittings, to trawl over rough ground which the local trawlers would not otherwise be able to fish.

296. A nylon shrimp otter net, based on the design of an Australian trawl, was made by the Fishing Master. This was tested from both the F.R.V. "Alister Hardy" and the Division's inshore boat Fisheries No. 1. Different lengths of single sweep wires were tried and then short "legs", or double sweeps, were tested. Several different types of foot-ropes were also tried and it was found that the local Chinese type, made up alternatively of pieces of lead and bamboo, was the most suitable for keeping the net down on the sea bed without ploughing into the mud.

297. Comparative trials with the nylon shrimp otter net and beam trawls, both being towed simultaneously from the "Alister Hardy", were conducted by the Fishing Master. Despite the

fact that long sweep wires of the most desirable length could not be used on the otter net while both types of gear were down, the indications were clearly that the otter net was superior. It is hoped that in time the owners of mechanized shrimp trawlers, all of whom are now using beam trawls, and many of them operating boats fitted with capstans, will follow the same trend which took place in Britain some 30 to 40 years ago and go over to otter trawling.

298. The other line of approach taken by the Division towards the introduction of otter trawling, was with the junk pair trawlers. In this connexion, the Fishing Master first made miniature scale models of both the Chinese pair net and a comparable European otter trawl. Then as a trial measure a cheap otter net, made out of ramie, was constructed as nearly as possible to the same specification as the local net; it being considered that the change-over will have to be as gradual as possible. The "Chinese otter trawl" was actually designed to be used from the new Fisheries Division Vessel No. 2—which has a more powerful engine than Fisheries No. 1—but it was not possible to try out the net properly as at the end of the year the proto-type back axle winch proposed for the new boat had not been fitted. The net was, however, towed fairly satisfactorily from Fisheries No. 1. It was also towed from the new boat and the warps then passed across to Fisheries No. 1 so that the hauling could be accomplished by using the capstan. The divisional crews took a close interest in both the making and testing of this new net.

299. Another otter trawling experiment that was attempted, was to borrow a ramie net from the skipper-owner of a pair of junk trawlers. This net was fitted to otter boards and towed from the "Alister Hardy". It was unfortunate that the net was rather badly damaged and, although the owner did not lose out financially, the experiment was not a success.

300. In co-operation with the Fisheries Research Unit, and by pooling gear belonging to both the University and the Fisheries Division, the "Alister Hardy" was used for shark long lining. Despite the then prevailing shark "scare" among the bathers at the local swimming beaches, these operations were singularly unsuccessful (or "successful", depending on whichever way one cares to look at it!). Only one shark, that

being a small Tiger Shark of 70 lbs. was captured. At the same time, three Skate-Rays which altogether weighed 475 lbs., were taken on the same long line.

301. Mention was made in the Annual Report for the previous year how, under an agreement supervised by the Division, an Aberdeen fisherman had borrowed a large nylon purse seine net from the local sales agents to try out. This was subsequently returned because, although it was lighter and easier to work than a cotton or ramie net of the same size, the colour was said to be wrong. The same net has since been recovered and lent to a fisherman in the Stanley district, who reported excellent results. More and more netting, made of synthetic fibres, is now being purchased by the fisherfolk.

302. Three Japanese nylon trammel nets were received by the Fisheries Division on loan—from the same local sales agents as had produced the nylon purse seine mentioned above—to lend to selected fishermen. These were accordingly tested by professional gill net fishermen at Tai O and Aberdeen. Disappointing results were however reported and these nets have not "caught on" locally. The same nets were also tried out by the Fisheries Division crews and it was found that, on account of the strong currents, they could not be made to work satisfactorily in the waters normally fished.

303. At the suggestion of the Fisheries Division, a simple and cheap sound detecting machine—consisting of two hydrophones (one pointing horizontally and the other directed downwards) linked to an amplifier—was made by one of the leading radio engineers in the Colony. The direction in which the hydrophones could be pointed was controlled from the deck. Using a sound box made up of a number of stones in a tin can, jerked up and down under the water on a length of rope, this equipment was tested at sea in the presence of two experienced Yellow Croaker fishermen. (The normal procedure is for the fishermen to trace the movements of the schools of croaker by listening, with their ears pressed against the inside hull planking of the boat, to the noises made by the fish). These two fishermen were most favourably impressed. The engineer who designed and made the equipment promised to carry out slight modifications, to narrow down the angle of the beam, whereupon further trials will be carried out.

304. A close interest was maintained in the activities of a Japanese vessel, landing fish in Hong Kong under the quota system, which was operating a form of Danish seine net. Fishing off the South-east coast of Hainan Island this vessel did not meet with much success but, as at the end of the year, it was still too early to say whether the venture will prove worthwhile.

305. Metal skates for shrimp beam trawling were lent by the Division to fishermen for trial; also staffs of the Division demonstrated the handling of this gear in fishing ground. Five Pa T'eng fishermen took to using these shrimp beam trawls during their slack season. Several sets of rather smaller and lighter skates than those previously tested, were made available to the fishermen owners of sailing shrimp trawlers. At the request of commercial fishing companies in Singapore, Malaya and North Borneo, six shrimp nets were constructed under the supervision of the Division for export; three of these nets were made of nylon and the remainder in ramie twine.

Training of Fishermen.

306. The Division continued with its training programme designed to qualify fishermen as acting Trawler Masters (for British registered ships), Coxswains and Engineers. In each case the training is in line with the requirements of the Marine Department. Most of the instruction was given at the Aberdeen Fisheries Office where training facilities are centralized but, to meet the demand produced by a growing fleet of mechanized vessels, Coxswains' classes were also conducted at Cheung Chau and Tai Po.

Skipper Classes.

307. All five candidates of the 4th Skipper Class, who had completed their course of instruction towards the end of the previous year, were examined by the Marine Department and successfully obtained "Acting Trawler Master (Limited)" endorsements to their Coxswain's Certificates. Five out of the six candidates from the 5th Class also passed the examination—the one remaining candidate having withdrawn to take up employment in vessels other than trawlers.

308. Although these trawler skippers are all excellent seamen with a considerable knowledge of the distant-water fishing

grounds, their general standard of education is on the whole very low. Many of these candidates were, therefore, required to be re-examined in navigation (one of them several times) before eventually passing the examination.

309. During the two years since these classes first started in March, 1955, a total of twenty-one Skippers had been trained by the Division and successfully passed the examination. Special mention should be made of the co-operation received from the local fishing companies using British registered (steel) trawlers, all of which paid full salaries to their Skippers whilst these officers were ashore undergoing training.

310. At the end of the year a further six candidates, from the 6th Class, were about to be examined.

Coxswains' Classes.

311. Eleven classes, involving 168 fishermen, were organized during the year. Including candidates who had been trained during the previous year but were not examined until after the 31st March, 1956, the number that passed the Marine Department examinations was 118—of which 16 obtained the full certificate for mechanized vessels of up to 60 tons net, while the remaining 102 candidates obtained modified certificates for fishing craft of under 1,000 piculs capacity. In all, a total of 650 fishermen had received coxswains' certificates, following departmental training, since the classes first started in April, 1951.

Engineering Classes.

312. Four classes, with a total of thirty-three fishermen candidates, completed their training during the year. Twelve out of the fourteen candidates from the 8th, 9th and 10th Classes, duly passed the Marine Department examinations. The remaining nineteen students of the 11th Class were asked to return to their vessels and continue fishing, on the understanding that they would be given a short refresher course before going up for their examination towards the end of June, 1957.

313. As in the case of the Skipper and Coxswain qualifications, it was realized that—following the advent of mechanization—it would be some years before the local fishing community would start producing first class engineers from

within its own ranks. Yet it was obviously desirable that as far as possible such men should be from the industry itself. The certificates of competency issued by the Marine Department are therefore special certificates valid for *bona fide* fishing craft only, which authorize the holder to take charge of diesel engines of from 50 to 150 b.h.p. (No special engineering qualifications are required for fishermen operating boats with engines of under 50 b.h.p. as the vessels invariably have sails which could be used should the engine fail. A special series of lectures on small diesel engines, with particular reference to maintenance, is however included in the coxswains' courses).

Fishermen's Party and Sports Day.

314. As there was no Fisheries Exhibition this year the presentation of Fish Marketing Organization Certificates was made at the Annual Fisheries Division Sports Day. Over 3,000 fishermen watched the sports which were organized by old boys of Coxswain and Engineer classes with the help of the Division. This annual social gathering is much appreciated by the fishermen and their families.

Economics of the Fishing Industry.

315. A field survey designed to obtain data concerning the economic background of the fishing industry was carried out by forty undergraduates of the Hong Kong University, during their Christmas vacation. The survey was financed by Government with funds from this Department. Three teams of trained interviewers visited representative fishermen, members of co-operative societies, fish dealers and market managers in a widespread number of localities. Sea and land transport, background information and personal introductions to the fisherfolk were provided by both the Co-operative and Marketing Department and by the Fisheries Division of this Department. Detailed questionnaires that had been prepared by a lecturer of the Economics Department of the University who is himself well acquainted with fishery problems, were put to some 400 people. This piece of work forms a part of the programme recommended by the Indo-Pacific Fisheries Council for adoption by Member-Governments throughout South East Asia.

Visiting Fisheries Training Ships.

316. The Japanese training ships "Nagasaki-Maru" and "Shimonoseki-Maru" visited Hong Kong during July and December respectively. The students, officers and instructors from these vessels were shown some of the main features of the local fishing industry and entertained at the Aberdeen Fisheries Office. In each case, Hong Kong fishery workers were invited on board the Japanese ships—one of which was engaged in tuna long line investigations while the other had just returned from an antarctic expedition—and given an opportunity to examine the equipment on board.

II — Fresh Water Fisheries & Oyster Culture Section

Fish Ponds.

317. This was an excellent year for the fish farmers of the New Territories—despite the very limited amount of water available during the dry period, the failure of the 1956 season for the capture of Grey Mullet fry, and, difficulties encountered in obtained fry from China of the various species of Carp required for stocking purposes. The total production of locally harvest pond fish and value is recorded in Part 1 of this report.

318. The increase in production was caused by a drastic reduction in the volume of living pond fish received from China. At the beginning of the year imports, which had previously been at the rate of 700 to 800 piculs per day, suddenly dropped. At no time was more than 600 piculs received, and the daily average was about 300 piculs only. This naturally resulted in better prices being paid in Hong Kong for the locally reared fish, which in turn stimulated production.

Supply of Fish Fry.

319. Normally some four million Grey Mullet (Mugil cephalus) fry and roughly two million fry of the various species of Chinese Carp.—*i.e.* the Grass Carp (Ctenopharyngodon idellus), Big Head (Aristichthys nobilis), Silver Carp (Hypophthalmichthys molitrix) and Mud Carp (Cirrhina molitorella) —are needed fully to stock the ponds of the New Territories. Neither of these two demands was very satisfactorily met. Less than half a million Grey Mullet fry had been caught early in 1956, the season having been a disappointing failure. The

position with regard to imports of Carp fry was not much better. Throughout the whole year the Chinese mainland authorities either put a total ban on exports or imposed restrictions, which naturally caused prices to rise considerably. Only the fry of the Common Carp (Cyprinus carpeo), which species breeds readily in captivity, was available in large quantities.

320. On account of the difficulties in obtaining fry, the members of the New Territories Fish Culture Association imported 200,000 Tilapia (Tilapia mossambica) fry from Formosa. The staff of the Fisheries Division held meetings with these fish farmers and clearly explained the risks that they were taking in attempting to introduce Tilapia. It so happened, however, that the entire population of these fish died a few months later when an abnormally cold spell of weather was experienced.

321. Searching for another alternative, the Fisheries Division conducted a series of investigations to see whether the fry of the Milk Fish (Chanos chanos) might at any time be available off the beaches of the Colony. Adult specimens of this fish having been periodically taken, it seemed reasonable to suppose that the fry might also be present. Two "Blabar" palm leaf lure lines, such as are used in Indonesia for the capture of these fry, together with a filter trap net, were accordingly made and periodically tried in the most likely locations. Although the investigations have so far proved fruitless, they will nevertheless be continued.

322. In November two gift consignments, of altogether 4,800 Milk Fish fry, were received through the courtesy of the Department of Fisheries in Bangkok, Thailand. The fry at first did well and this aroused interest among local fish culturalists, who promptly volunteered to co-operate in the Fisheries Division investigations. In January, however, the then fingerlings died during a cold spell and it became obvious that unless these fry can be caught locally in the spring, to allow a reasonable period of warm weather in which to reach marketable size, there is little hope for success in this direction.

323. Fortunately the 1957 season (January to March) for the capture of Grey Mullet fry was an excellent one. Over five

million fry were taken and the price, which started at $4 per tael (*i.e.* 60 fry each of one inch in length) dropped to only $0.40 a tael towards the end of March.

Fish Fry Export Trade.

324. The fish fry export trade from Hong Kong is dependent upon local dealers being able to receive supplies from China. Owing to export restrictions imposed by the Chinese mainland authorities—necessitated by heavy rains in the upper reaches of the West River which adversely affected the spawning season by flooding the fish fry collecting bases and, also, the fact that the experienced dealers who formerly conducted this trade were replaced by newly formed Governmental agencies—only 5,932,309 fry were shipped out of Hong Kong; this being accomplished after local fish farmers had received, at high prices, just sufficient fry to meet their stocking requirements.

325. The above-mentioned export figure is approximately one quarter only of the quantity exported in 1955 56 (*i.e.* 23,397,683) which had also been a difficult year.

326. The different species of fry, and numbers in each case, that were received from China and exported was as follows:— Grass Carp (5,098,250), Silver Carp (634,333), Big Head (190,726) and Bream (9,000). These went in altogether one hundred shipments, some by air and some by sea, to Formosa (3,162,000), Singapore (2,357,800), Bangkok (412,009), Manila (300) and Laos (200).

Increase of Fish Ponds.

327. A further 18.5 acres of land was converted to use for fish culture during the year. This comprised three fresh-water and six brackish-water ponds, all of which were derived from either the rebuilding of derelict and disused former fish ponds or the construction of new ponds on former silt or paddy fields. After allowing for the disappearance of two fish fry holding ponds of 1.9 acres, which were reclaimed to provide building sites, the total area devoted to fish culture as at the end of the year was 515 acres.

328. Valuable aid towards the promotion of fish culture was received from the Kadoorie Agricultural Aid Association. Seven loans totalling $18,700 were made by this Association

for the repair of damaged ponds, construction of a new community village pond and purchase of fish fry. Free gifts of cement and money, together with the loan of water pumps during the dry season, were also much appreciated.

New Fisheries Division Ponds.

329. Two new ponds of 1.2 and 1.72 acres, respectively, were constructed on Crown Land that had been reserved for the Department at Au Tau, in the New Territories. A raised watchman's hut and store, together with separate kitchen and toilet facilities, was also built.

330. Eighty thousand Grey Mullet fry were placed in the smallest pond, where it was intended that they should be kept crowded until the autumn of 1957 for disposal among local fish farmers to restock their ponds for a second crop, at a time when Grey Mullet are not ordinarily available.

331. The second, or larger pond, is to be sub-divided into a number of smaller ponds. This will enable comparative studies to be made of the conditions required to achieve increased productivity. These would be carried out as a joint project by the Fisheries Research Unit of the University and this Department.

Edible Oyster Industry.

332. The edible oyster industry is centralized in Deep Bay on the Western coast of the New Territories. Total production from the beds amounted to 15,963 piculs (950.2 tons) of fresh oyster meat, valued at approximately HK$1,280,000 (figures for the year before were 15,763.2 piculs—*i.e.*, 938.3 tons—valued at HK$1,300,000). The bulk of this oyster meat was processed, mostly for export to America, and details of this are recorded in Part 1 of this report.

333. To facilitate exports, officers of the Division witnessed harvesting operations at the oyster beds and the subsequent processing. Altogether 4,952 containers were sealed and the contents certified as being of genuine Hong Kong origin.

334. Prices obtained for fresh oyster meat remained, as in the previous year, between $80 to $100 per picul. Exporters, however, received $900 to $1,400 per picul for their dried oysters

(as compared with only $700 to $1,200 in the previous year); while prices for oyster juice varied between $530 and $550 during the year under review as against $510 to $600 in 1955 56.

Oyster Culture Extension Work.

335. Experiments conducted at Deep Bay have shown that, by using the Japanese "hanging-drop" method instead of the primitive method normally practised here, it is possible to obtain oysters of the accepted marketable size in 2½ years instead of waiting the customary 4 years. Maintenance and labour costs were however high and, unless a more suitable substitute can be found for the wire previously used, it appears that the experiments will have to be abandoned on economic grounds. The trouble has been that the wire drops on which the oysters were suspended quickly corroded and, with the violent motion of rough seas, this resulted in the oysters coming adrift from the floating rafts and falling to the sea bed.

336. In December, 1955, a number of the local edible oysters (Ostrea gigas) had been transplanted from the brackish waters of Deep Bay and suspended under a raft located at Centre Island, in the Tolo Harbour area, on the East coast. Despite encouraging results in the early stages, it was later clear that these oysters did not do as well in their highly saline new environment as they would have done in the fresher waters of Deep Bay. At the end of the year now under review, the Fisheries Research Unit of the Hong Kong University received stocks of oyster spat, from Japan, of different varieties which it is hoped will prove more successful. Assistance in the setting out and safe-guarding of these oysters was provided by the Fisheries Division.

Certificates of Origin.

337. In addition to the Deep Bay oyster produce mentioned above, the Division was also responsible for the certification of origin of a number of other marine products. Details are recorded at paragraph 55 in Part I of this Report.

Agricultural Show.

338. At the annual Agricultural Show, held in the Yuen Long Middle School between the 19th and 21st January, fish farmers

exhibited living specimens of locally reared fish in a competition; prizes being awarded for the best fish in each class. This was the first competition of its kind. The response from the New Territories Fish Culture Association was excellent.

ACKNOWLEDGMENTS

339. It is with much pleasure that the following acknowledgments are made:—to those members of the public who served on the Agricultural Show Committee or otherwise assisted; to Mr. Lawrence Kadoorie and Mr. Horace Kadoorie for their continued and ever increasing practical interest in the welfare of the people of the New Territories. To the United States, Netherlands and Japanese Consulates General and the Thai Consulate for making available technical information and statistics from their respective countries. To the Thai Government for making available at regular intervals important vaccines for the control of animal diseases. To my competent and loyal staff who have with enthusiasm worked hard and well in the interests of the primary producer.

W. J. Blackie, M.Sc. (N.Z.),
F.R.I.C., F.N.Z.I.C.,
Director of Agriculture, Fisheries & Forestry.

APPENDIX 1

STATISTICAL INFORMATION AND TABULATED DATA

Appendix 1

TABLE A

METEOROLOGICAL DATA

Month	Temperature			Mean Relative Humidity	Mean Cloudiness	Wind Prevailing Direction Point	Wind Velocity Mean knots	Total Rainfall in mm. 1956-57	Total Rainfall in mm. 1955-56	Totol Sunshine hours 1956-57	Total Sunshine hours 1955-56
	Mean Max. °F.	Mean °F.	Mean Min. °F.								
1956											
April...	80.8	74.0	69.8	80	67	ENE	10.4	69.7	173.6	174.6	174.4
May ...	83.3	77.8	74.1	88	84	ENE	9.5	239.7	440.9	137.4	169.4
June...	87.4	82.2	77.4	84	67	SSW	8.2	413.8	293.9	213.9	136.9
July ...	89.4	83.5	78.8	82	55	WSW	6.6	145.9	619.0	262.7	159.9
August	87.6	82.2	77.9	83	65	ENE	9.6	388.6	547.9	228.7	207.9
Sept...	88.1	82.2	77.2	74	54	ENE	9.1	161.9	142.8	228.6	252.7
Oct. ...	82.3	76.5	71.6	71	47	ENE	9.9	37.4	6.2	242.3	289.2
Nov. ..	72.2	66.6	61.4	64	55	NNE	9.4	33.6	45.4	172.0	181.0
Dec. ...	67.0	61.1	56.1	72	54	E	7.8	7.3	24.1	163.6	228.7
1957											
Jan. ...	66.3	60.8	56.7	79	68	E	11.2	15.6	77.1	139.0	165.1
Feb. ...	58.7	54.7	51.0	81	84	E	11.7	99.3	65.6	58.3	97.1
March.	67.5	63.3	59.9	83	82	E	9.1	97.2	8.7	82.4	102.4
						Total		1,710.0	2,445.2	2,103.5	2,164.7

Appendix 1

TABLE B

ANIMAL POPULATION (November, 1956)

Dairy cattle	2,535
Brown cattle	14,237
Buffaloes	1,912
Pigs	117,212
Goats	340
Sheep	33
Poultry	754,900
Ducks	238,650
Geese	20,400
Turkeys	1,385
Pigeons	50,210
Quails	17,020

NOTE: Field census by officers of Animal Iudustries Division.

Appendix 1

TABLE C

PADDY PRODUCTION 1956

A. **First Crop** (April — July 1956).

(*a*) *Fresh water paddy:*

1.	Acreage of 2-crop paddy land	20,192	acres
2.	Acreage of crop damaged by drought	6,574	..
3.	Acreage of cropped area, not affected by drought ...	13,618	..
4.	Estimated total yield @ 2 piculs per dou chung	163,416	piculs

(*b*) *Upland paddy:*

Total area 248 acres @ 1 picul per dou chung	1,488	piculs

B. **Second Crop** (July — December 1956).

(*a*) *Fresh water paddy:*

1. Acreage of 2-crop paddy land	20,192	acres
2. Estimated total yield @ 2 piculs per dou chung	242,304	piculs

(*b*) *Brackish water paddy :* ..... 2,912 acres

Estimated total yield @ 2 picul per dou chung ..... 34,944 piculs

Grand total	442,152	piculs or
	26,748	metric tons
Milled Rice (68%)	18,188.64	metric tons

TABLE D

PADDY PRODUCTION IN THE COLONY — 1956

By District

District	Upland Paddy			1st Crop Paddy			2nd Crop Paddy			Brackish Water Paddy		
	Area acres	Av. yield per d. c. picul	Yield piculs	Area acres	Av. yield per d. c. picul	Yield piculs	Area acres	Av. yield per d. c. picul	Yield piculs	Area acres	Av. yield per d. c. picul	Yield piculs
Sha Tin	5	1.5	45	740	2.2	9,768	740	2.3	10,212	10	2.3	138
Tai Po & Sai Kung (N.)	13	1.0	78	2,350	2.2	31,020	2,350	2.3	32,430	—	—	—
Sheung Shui	60	1.2	432	4,300	2.0	51,600	4,300	2.2	56,760	75	1.5	675
Sha Tau Kok	75	1.2	540	1,180	1.8	12,744	1,180	2.0	14,160	130	2.0	1,560
Kam Tin & San Tin	14	1.0	84	2,500	2.0	30,000	3,750	2.0	45,000	1,300	1.5	11,700
Castle Peak	—	—	—	3,300	2.0	39,600	5,000	2.2	66,000	1,350	1.8	14,580
Tsuen Wan	5	1.2	36	130	2.0	1,560	130	2.0	1,560	—	—	—
Sai Kung (S.)	4	1.5	36	1,100	2.0	13,200	1,100	2.0	13,200	20	2.3	276
Lantao Island	—	—	—	1,150	1.8	12,420	1,150	1.5	10,350	3	2.0	36
Other Islands	8	1.5	72	250	1.8	2,700	250	1.8	2,700	2	2.0	24
Total	184		1,323	17,000		204,612	19,950		252,372	2,890		28,989

Appendix 1

TABLE E

VEGETABLES

Comparative Production Figures

	1955/56 metric tons.	*1956/57 metric tons.*	*1955/56 piculs.*	*1956/57 piculs.*
1. Cabbage, flowering	5,473.71	5,537.52	90,480.38	91,535.18¾
2. Cabbage, white	19,746.82	17,412.22	326,414.98¾	287,823.97
3. Cabbage, leaf mustard	4,650.70	3,779.32	76,876.05	62,472.23½
4. Kale	2,536.09	2,989.95	41,921.61	49,423.83¾
5. Sweet potato	867.15	1,335.70	14,334.07	22,079.12
6. Tomato	2,400.00	2,648.04	39,672.16½	43,772.17½
7. Water cress	1,841.96	1,786.89	30,447.67	29,537.23¾
8. Onion, spring	1,460.85	1,558.24	24,147.85½	25,757.73
9. Turnip	5,253.16	4,090.63	86,834.66¾	67,618.16
10. Lettuce, Chinese	3,002.84	2,655.54	49,636.94½	43,896.05½
11. Spinach, Chinese	504.46	559.51	8,338.71¾	9,248.70½
12. Spinach	1,285.26	1,440.55	21,245.41½	23,812.37¾
13. Spinach, water	2,160.03	2,308.97	35,705.35¾	38,167.27
14. Chinese chives	1,194.35	1,128.87	19,742.54	18,660.26½
15. Bringal	674.72	773.77	11,153.07½	12,790.38
16. Cucumber	1,094.14	1,705.75	18,086.20½	28,195.99
17. Bean, string	1,161.81	1,964.34	19,204.73	32,470.50½
18. Yam bean	514.88	284.88	8,511.00	4,709.04
19. Taro	258.12	431.77	4,266.67½	7,137.22½
20. Miscellaneous	16,265.17	22,616.95	268,863.33½	373,858.14
Local	72,346.22	77,009.41	1,195,883.43½	1,272,965.60
Import	6,673.06	8,004.37	110,305.69	132,312.20

Appendix 1

TABLE F

VEGETABLES

Comparison of Yield in Districts

Districts.	*1955/56 Wt. in piculs.*	*1956/57 Wt. in piculs.*
Kowloon	60,575.24¾	66,646.63
Sha Tin	6,312.06¾	4,854.27½
Tai Po	85,068.70	98,861.05
Fan Leng	358,479.41½	388,444.76¼
Sheung Shui	173,310.04½	210,959.77½
San Tin	80,804.45¼	89,708.01
Yuen Long	123,262.10½	106,342.35
Kam Tin	76,514.76	95,342.10
Castle Peak	177,494.45¾	164,581.61¾
Tsuen Wan	54,062.19½	47,225.03
	1,195,883.44½	1,272,965.60

TABLE G

EXPORT CROPS

No.	Crop	1954-55			1955-56			1956-57		
		Quantity (picul)	Unit Price ($)	Amount ($)	Quantity (picul)	Unit Price ($)	Amount ($)	Quantity (picul)	Unit Price ($)	Amount ($)
1.	Vegetable Seeds	—	—	—	74.27	500	37,135.00	219.02	500	109,510.00
2.	White Cucumber	485.91	15	7,288.65	1,409.13	15	21,136.95	1,176.45	20	23,529.00
3.	Bitter Cucumber	—	—	—	82.90	34	2,818.60	267.15	45	12,021.75
4.	Mushroom	—	—	—	—	—	—	24.99	400	9,996.00
5.	Taro	651.72	35	22,810.20	1,491.46	38	56,675.48	1,820.62	25	45,515.50
6.	Ginger	3,195.75	55	175,766.25	4,342.24	26	112,898.24	1,983.67	60	119,020.20
7.	Lotus Root	—	—	—	1,668.35	40	66,734.00	1,649.60	45	74,232.00
8.	Lotus Seeds	—	—	—	—	—	—	29,730(fruit)	40	11,892.00
9.	Yam	—	—	—	1,059.88	40	42,395.20	1,507.98	40	60,319.20
10.	White Cabbage	3,885.65	20	77,713.00	4,797.63	14	67,166.82	1,789.00	15	26,835.00
11.	Radish	1,682.93	15	25,243.95	773.45	15	11,601.75	631.13	12	7,573.56
12.	Turnip	8,132.90	26	211,455.40	4,349.14	23	100,030.22	3,644.49	15	54,667.35
13.	Mustard	2,237.36	10	22,373.60	1,543.19	20	30,863.80	—	—	—
14.	Waterchestnut	22,004.36	40	880,174.40	29,118.23	40	1,164,729.20	41,907.17	35	1,466,750.95
15.	Arrow Head	110.53	55	6,079.15	1,264.71	48	60,706.08	1,942.97	65	126,293.05
16.	Lychee	254.86	30	7,645.80	9,837.28	40	393,491.20	7,206.63	80	576,530.40
17.	Lemon	74.97	50	3,748.50	842.14	50	42,107.00	1,402.92	50	70,146.00
18.	Wongpei	112.33	50	5,616.50	748.62	70	52,403.40	520.59	65	33,838.35
19.	Japanese Apricot	109.20	60	6,552.00	373.65	60	22,419.00	648.95	60	38,937.00
20.	Longan	—	—	—	—	—	—	227.00	80	18,160.00
	Total			$1,452,467.40			$2,285,311.94			$2,885,767.31

NOTE: (1) The Quantity of each crop is based on the amount for which certificates of origin were issued.
(2) The Unit price is based on the average market price.

TABLE H

PIGEON, QUAIL, GEESE, DUCKS

Locally Raised for Home Consumption and Export

No.	Kinds	1954-55			1955-56			1956-57		
		Number	Unit price ($)	Amount ($)	Number	Unit price ($)	Amount ($)	Number	Unit price ($)	Amount ($)
1.	Pigeon (Local consumption)	22,000	3	66,000	30,000	3½	105,000	50,216	4½	225,972
2.	Quail (Local consumption)	85,000	1	85,000	20,000	1	20,000	17,020	1	17,020
3.	Geese (Local consumption)	1,000	12	12,000	1,000	12	12,000	20,400	12	244,800
4.	Ducks (Export)	144,585	6	867,510	106,373	6	638,238	102,401	6	614,406
5.	Ducks (Local consumption)	—	—	—	—	—	—	136,249	5	681,245
	Total			$1,030,510			$775,238			$1,783,443

NOTE: 1. The number of birds is based on the figures of the Animal Husbandry Division Annual Reports.

2. The average price per head is based on the information of the breeders.

3. The ducks for export were the best selected ones, so the price is slightly higher than those for local consumption.

4. There is no figure for ducks for local consumption in the year 1954-55 and 1955-56.

TABLE J

ESTIMATED VALUE OF FRESH FRUIT CONSUMED IN HONG KONG

Name of Fruit Tree	No. of Trees	Quantity of Fruit (Catties)	Value of Fruit(s)
			$
Sweet Orange	3,000	50,000	60,000.00
Tangerine	14,827	296,540	296,540.00
Foreign lemon	300	9,000	3,600.00
Local lemon*	12,288	307,200	92,160.00
Pomelo	1,394	69,700	10,455.00
Mandarine	700	1,050	1,575.00
Calamondin	1,650	8,250	8,250.00
Kumquat	1,150	2,300	3,450.00
Wongpei*	6,845	171,125	102,675.00
Lychee*	18,000	900,000	630,000.00
Longan*	4,000	200,000	100,000.00
Papaya	18,000	360,000	72,000.00
Guava	17,367	260,505	65,126.00
Banana	4,726	141,780	28,356.00
Chinese Olive*	3,854	462,480	161,868.00
Carambola	1,000	20,000	8,000.00
Mango	800	8,000	6,400.00
Yanmin	370	74,000	14,800.00
Plum	320	9,600	1,440.00
Persimmon	320	11,200	3,360.00
Sand Pear	220	6,600	2,640.00
Japanese Apricot*	4,500	135,000	81,000.00
Peaches	6,000	6,000	18,000.00
Pineapple	70,000	100,000	30,000.00
Miscellaneous	12,000	20,000	8,000.00
(Including jack fruit, loquat, noble bottle tree, rose apple, custard apple, etc.)			
Total	203,631	3,630,330	$1,809,695.00
(including 70,000 pineapples)			

* Including the exported crops.

TABLE K

IMPORTS AND EXPORTS OF TIMBER AND FUEL FOR YEAR ENDED 31ST DECEMBER, 1956

CATEGORY	GROSS IMPORTS		GROSS EXPORTS		NET IMPORTS		Percentage by value of gross imports or exports from or to different sources or destinations	
	Hundred of Cu. ft.	Value $	Hundred of Cu. ft.	Value $	Hundred of Cu. ft.	Value $	Imports	Exports
TIMBER								
(A) ROUND:								
1. Teak	2,794	4,086,488	235	302,331	2,559	3,784,157	North Borneo (British) 52%	U. S. A. 31%
2. Primary Hardwood	3,306	1,733,018	390	536,204	2,916	1,196,814	Thailand 27%	Macao 22%
3. Secondary Hardwood	13,352	5,501,773	825	650,616	12,527	4,851,157	China (excluding Formosa)..... 10%	United Kingdom..... 11%
4. Light Hardwood	55,182	17,260,970	1,401	542,032	53,781	16,718,938	Canada..... 2%	China (excluding Formosa)..... 10%
5. Soft Wood	2,031	659,197	123	47,598	1,908	611,599	Australia 2%	Australia 9%
6. Timber for match making	73	38,636	—	—	73	38,636	U.S.A. 2%	New Zealand ... 8%
6a. Pols. Pilings & Posts	2,036	662,466	—	—	2,036	662,466	Philippines 2%	Formosa (Taiwan)..... 4%
(B) SAWN:							Malaya..... 2%	South Africa.... 2%
7. Teak	4,660	7,854,601	114	249,110	4,546	7,605,491	Other Sources... 1%	North Borneo(B) 1%
8. Primary Hardwood	322	486,084	1	3,610	321	482,474		United States Oceania..... 1%
9. Secondary Hardwood	404	302,122	1,530	1,208,802	—	—		Other Destination 1%
10. Light Hardwood	5,922	2,471,462	3,130	2,855,737	2,792	—		
11. Soft Wood	10,455	5,415,606	28	18,430	10,427	5,397,176		
12. Timber for match making	—	—	—	—	—	—		
Total timber	100,537	46,472,423	7,777	6,414,470	93,886	41,348,908		
FUEL	Cwt.	Value $	Cwt.	Value $	Cwt.	Value $		
(A) Firewood	3,448,937	11,885,216	32,390	84,757	3,416,547	11,800,459	China .....73% Malaya.....15% North Borneo...11% Other Sources... 1%	Macao 100%
(B) Charcoal	906,541	9,194,579	21,941	289,663	884,600	8,904,916	Malaya.....80% China (excluding Formosa).....20%	Macao 100%
Total fuel	4,355,478	21,079,795	54,331	374,420	4,301,147	20,705,375		

TABLE L

Appendix 1

CROP VALUATION AND COMPENSATION

Date	Location	Crops	Acreage sq. ft.	Valuation $	Department Concerned
5.4.56	Farm Road, Kowloon	Vegetable	6,528	315.88	P.W.D. Office
12.4.56	Shek Pik	Sweet Potato	6,230	623.35	Water Works
13.4.56	Ha Tsuen	Vegetable	3,170	203.90	Army Manoeuvres
13.4.56	,, ,,	Tomato	3,000	232.44	,, ,,
23.4.56	Lyemun	Vegetable	597	54.52	Plane Crash
26.4.56	Tai Wo Hau, T.W.	Ginger Lily	1,687	163.27	Resettlement
30.4.56	Cornwall St., Kowloon	Vegetable	8,133	260.53	Road Construction
1 5.56	Lai Che Kok Gap	Misc. Crop	2,328	477.83	Tai Lam Chung Scheme
8.5.56	Tsuen Wan	Vegetable	3,100	195.98	Layings of Water Piping
18.5.56	Kau Wa Keng	Paddy	1,575	18.90	
18.5.56	Ping Shan	Sugar Cane	1,535	127.00	Army Manoeuvres
6.6.56	Ngau Tau Kok	Vegetable	4,280	316.48	Land Reclamation
6.6.56	Shek Kong	Misc. Crop	9,065	239.40	Army Quarters
4.6.56	Kam Tin	,, ,,	10,875	1,963.75	Plane Crash
15.6.56	Li Cheng Uk Tsun	Flowers & Veg.	80,000	8,247.23	Resettlement
25.6.56	Kei Lun Wai	Paddy	39,353	379.75	D.O.Y.L.
July 56	Tai Lam Chung	Vegetable	839,256	46,210.80	Tai Lam Chung Scheme
16.7.56	Castle Peak	Paddy	39,353	1,254.92	Thru. D.O.
22.7.56	Kung Tong	Vegetable	221,284	16,617.94	Land Reclamation
23.7.56	Tai Wo Hau	Ginger Lily	3,570	256.90	Resettlement
25.7.56	Lantao Island	Paddy & Vegetable	91,233	4,003.43	Road Building
7.9.56	Tai Po	Paddy	1,310	12.25	Thru. D.O.
15.9.56	Kung Tong	Vegetable	2,418	123.41	,, ,,
17.9.56	Fan Leng	Paddy	4,506	197.90	,, ,,
17.9.56	,, ,,	Vegetable	26,688	811.39	,, ,,
17.9.56	Tsuen Wan	,,	21,034	1,104.46	,, ,,
Oct. 56	Tai Hang Tung	Veg. & flowers	17,081	1,479.18	,, Resettlement
21.10.56	,, ,, ,,	,, ,,	15,408	1,137.07	,, ,,
17.9.56	Tin Hau Temple Rd.	,, ,,	20,104	2,417.02	Road Construction
21.9.56	Lo Fu Ngam	,, ,,	29,212	2,933.79	,, ,,
22.11.56	Cheung Sha Upper Vil. Lantao	Crops & trees	1,647	1,424.92	,, ,,
14.12.56	Queen's Hill Camp, Fan Leng	Paddy	26,688	811.39	Soil errosion, Army Camp
22.12.56	So Uk Tsun	Shrub, Veg., trees	65,644	14,744.81	Housing Scheme
24.1.57	Tin Hau Temple	Vegetable	12,620	1,207.08	Road Extension
5.3.57	Li Cheng Uk Tsun	Flowers, veg., shrub	216	1,628.91	School Site
19.2.57	Kung Tong	,, ,, ,,	108,944	12,417.91	Land Reclamation
11.1.57	Cheung Sha Upper Vil.	Trees	—	388.50	Road Construction
18.1.57	Ta Kwa Ling	Paddy	15,340	84.40	Damaged by smoke
8.2.57	Tsuen Wan	Vegetable	2,209	180.71	Water Scheme
21.2.57	Ma Liu Shui	Paddy	111,298	915.30	School Building
25.2.57	Tsuen Wan	Vegetable	8,542	235.14	Police Station
25.2.57	,, ,,	,,	6,164	639.44	Road Construction
5.3.57	Kwun Yam Ngam	Trees & flowers	—	292.12	,, ,,
		Total	1,873,225 or 258 d.c. or 43 acres	127,351.30	

NOTE: Summary of Crop Compensation work undertaken by officers of Agricultural Division.

Appendix 1 — TABLE M

CONSTRUCTION WORK BY FARMERS WHO RECEIVED FREE GIFTS OF CEMENT FROM K. A. A. A.

District	Dams	Channels	Paths	Bridges	Wells	Piers	Reservoirs	Bunds
(i) South	19	5	4	8	5	1	—	—
(ii) Yuen Long	—	2	10	1	3	—	—	1
(iii) Tai Po	—	—	2	3	—	—	—	—
(iv) Elsewhere	4	7	16	5	9	—	1	—
	23	14	32	17	17	1	1	1

(i) (ii) (iii) Cement distributed by District Officers.
(iv) Cement distributed by D. A. F. F.

NOTE: Total cement distributed = 106.

Appendix 1 — TABLE N

K. A. A. A. IRRIGATION PUMP SERVICE

District	Villages Served	Families Assisted	Area Covered D.C.	Working Hours	Remarks
Castle Peak	11	42	271½	1,202	Paddy & Fish Pond
Kam Tin	18	48	468	665	Paddy & Vegetables
Ping Shan	2	10	81	119	,,
Tai Po	3	40	13	129	..
Silver Mine Bay	3	14	23½	52	..
Yuen Long	4	48	69½	119½	,,
	41	202	962½	2,286½	

NOTE: Pumps donated by K. A. A. A. to Government.
Pumps maintained and used by Government to assist farmers in dry periods.
D.A.F.F. staff operate the pumps.

Appendix 1 — TABLE O

DISTRIBUTION OF THRESHERS AND SPRAYERS FREE GIFTS BY K. A. A. A. TO VILLAGES

District	No. of Threshers	No. of Sprayers
Sha Tin	13	27
Tai Po	28	46
Sheung Shui	27	23
Sha Tau Kok	20	36
Pat Heung	8	
Kam Tin	20	45
Shap Pat Heung	4	
Ping Shan	7	
Castle Peak	31	50
Tsuen Wan	4	28
Sai Kung	16	56
Lantao	22	46
Village Orchards	—	43
Total	200	400

NOTE: Threshers and Sprayers of Japanese design found satisfactory by officers of Agricultural Division.

TABLE P

VILLAGE ORCHARDS ESTABLISHED DURING 1956 / 57

Name of Village Orchard	Location	Acreage in acre	Kinds of Fruit Trees			Families benefited
1. Pak Ngau Shek	Lam Tsuen	.80	Japanese Apricot	70	180	2
			Lemon	60		
			Calamondin	20		
			Pomelo	30		
2. Hin Tin	Sha Tin	.90	Orange	100	200	23
			Tangerine	100		
3. Keng Hau	Sha Tin	2.10	Tangerine	200	476	15
			Pomelo	100		
			Lemon	80		
			Japanese Apricot	96		
4. Tai Om	Lam Tsuen	1.00	Tangerine	100	225	—
			Lemon	65		
			Orange	60		
5. Tam Shui Hang	Sha Tau Kok	.80	Tangerine	90	180	27
			Wongpei	90		
6. Chuk Yuen	Ta Kwo Ling	2.60	Wongpei	100	582	13
			Japanese Apricot	120		
			Tangerine	120		
			Pomelo	100		
			Lemon	142		
7. Chek Kang	Sai Kung N.	1.25	Tangerine	100	300	33
			Lemon	100		
			Japanese Apricot	100		
8. Ham Tin	Tsing Yi Isl.	1.20	Tangerine	130	260	15
			Wongpei	130		
9. Shui Bin Tsuen.....	Peng Shan	1.22	Tangerine	135	270	53
			Lemon	135		
10. Wong Uk Tsuen	Yuen Long	1.80	Japanese Apricot	150	380	70
			Pomelo	100		
			Tangerine	130		
11. Kwan Tei	Fan Leng	1.72	Tangerine	185	385	24
			Wongpei	100		
			Japanese Apricot	100		
12. Shap Long.....	Lantao Isl.	1.50	Tangerine	190	353	200
			Pomelo	86		
			Guava	77		

Appendix 1

TABLE P—*Contd.*

VILLAGE ORCHARDS ESTABLISHED DURING 1956 / 57—*Contd.*

Name of Village Orchard	Location	Acreage in acre	Kinds of Fruit Trees			Families benefited
13. Siu Lek Yuen	Sha Tin	1.00	Tangerine Wongpei	128 100	228	19
14. Liu Pok	Lo Wu	1.25	Tangerine Wongpei Pomelo	100 100 100	300	85
15. Pak Ngan Heung ...	S.M.B.	2.12	Tangerine Wongpei	300 173	473	15
16. Nim Shue Wan	S.M.B.	2.70	Tangerine Wongpei	400 200	600	30
17. Pok Wai	San Tin	2.00	Tangerine Japanese Apricot	300 150	450	—
18. Lo Uk Tsuen	Tsing Yi Isl.	1.20	Tangerine Japanese Apricot	135 135	270	—
19. Ngau Au	Tung Chung	.90	Tangerine Japanese Apricot	100 100	200	9
20. Tai Wai	Sha Tin	2.30	Tangerine Wongpei Guava	200 200 120	520	103
21. Ma On Kong	Kam Tin	3.60	Tangerine Lemon Guava	300 200 310	810	25
22. Tai Tong Wu	Sha Tau Kok	2.00	Tangerine Wongpei	250 200	450	9
23. Ping Yeung Tsun ...	Ta Kwo Ling	1.60	Japanese Apricot Guava	200 150	350	—
24. Sha Kok Mei.....	Sai Kung	1.20	Tangerine Lemon Wongpei	100 100 60	260	—
25. Tin Fu Tsai	Tsuen Wan	1.70	Japanese Apricot Tangerine Guava	150 150 80	380	—
26. Sun Hing Tsun	Ha Tsun	2.00	Guava Tangerine Lemon	80 180 180	440	120

TABLE P—*Contd.*

VILLAGE ORCHARDS ESTABLISHED DURING 1956/57—*Contd.*

Name of Village Orchard	Location	Acreage in acre	Kinds of Fruit Trees			Families benefited
27. Shan Pui	Yuen Long	1.90	Guava	120	420	125
			Tangerine	100		
			Lemon	100		
			Pomelo	100		
28. Chung Mei	Tsing Yi Isl.	.90	Tangerine	60	200	—
			Lemon	60		
			Guava	80		
29. Ngau Tam Mei	Sha Tin	2.40	Japanese Apricot	300	540	—
			Wongpei	60		
			Lemon	100		
			Tangerine	80		
30. Tai Pak	Lantao Isl.	1.80	Tangerine	150	400	—
			Lemon	100		
			Pomelo	150		
31. Wang Chau	Yuen Long	2.60	Japanese Apricot	150	580	—
			Lemon	230		
			Tangerine	200		
32. Kak Tin	Sha Tin	1.70	Orange	100	380	47
			Tangerine	100		
			Japanese Apricot	180		
33. Sun Tin	Sha Tin	4.30	Guava	350	950	—
			Japanese Apricot	200		
			Tangerine	200		
			Lemon	200		
34. Fung Yuen	Tai Po	2.80	Tangerine	200	610	—
			Lemon	200		
			Orange	210		
35. Tin Sam	Sha Tin	3.10	Wongpei	280	680	—
			Tangerine	200		
			Lemon	200		
36. San Tin	Sha Tin	2.20	Wongpei	100	500	—
			Tangerine	200		
			Japanese Apricot	200		

Appendix 1

TABLE Q

LANDINGS OF THE MAIN SPECIES OF FISH MARKETED IN 1956/57 AND FIGURES FOR THE SAME SPECIES DURING THE PREVIOUS YEAR

English Name	Scientific Name	Landings in Piculs		Difference	
		1956-57	1955-56	Increase	Decrease
1. Golden Thread...	Synagris virgatus (Houttuyn)	95,641	87,400	9.4%	—
2. Conger Pike	Muraensox arabious (Bloch & Schneider)	43,814	41,526	5.5%	—
3. Lizard Fish	Saurida tumbil (Bloch)	40,603	41,387	—	1.9%
4. Red Sea Bream	Tauris tumfrons (Schlegel)	34,168	39,800	—	14.2%
5. Anchovies	Stolephorus sp.	32,952	28,796	14.4%	—
6. Carangoid Fish...	Carangidae sp.	25,346	14,718	72 %	—
7. Croaker	Argyrosomus sp.	23,383	24,943	—	6.3%
8. Horse Head.....	Branchiostegus japonicus	21,431	15,946	34.4%	—
9. Red Snapper ...	Lutjanus erythropterus	20,952	25,293	—	17.1%
10. Melon Seed.....	Psenopsis anomala (Schlegel)	19,881	11,479	73 %	—
11. Yellow Croaker	Pseudosciaena crocea (Richardson)	19,772	25,096	—	21.2%
12. Mackerel Scad...	Decapterus lajong (Bleeker)	17,119	16,058	6.6%	—
13. Hair Tail	Trichiurus haumela (Forskal)	16,763	22,232	—	24.6%
14. Red Goat Fish...	Upeneus moluccensis (Bleeker)	14,535	20,124	—	27.8%
15. Shark	Elasmobranchs	13,025	13,021	0.001%	—
16. Macau Sole	Cynoglossus macrolepidotus (Bleeker)	12,712	11,552	10 %	—
17. Mackerel	Cybium sp.	11,579	13,723	—	15.6%
18. Cuttle Fish.....	Sepia sp.	9,778	10,465	—	6.6%
19. White Herring...	Hisha elongata	9,516	11,605	—	18 %
20. Golden Sardine	Saudinella aurita	1,422	618	130 %	—

TABLE R

FISHING VESSELS AND FISHERFOLK (INCLUDING WOMEN AND CHILDREN)

Type of Junk	Aberdeen		Shaukiwan		Cheung Chau		Tai O		New Territories												Yaumati		Total	
									Tai Po		Tap Mun		Kat O		Stanley		Castle Peak		Sai Kung		Shataukok					
	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk	Junk	Fisher-folk
Liners																										
Big Long Liner	8	320	47	1,880	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	40	56	2,240
Medium Long Liner	48	768	33	528	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	64	—	—	2	32	87	1,392
Small Long Liner	303	1,818	186	1,116	86	516	86	516	16	96	3	18	—	—	1	6	62	372	60	360	15	90	—	—	818	4,908
Hand Liner	72	432	82	492	115	690	40	240	276	1,656	34	204	17	102	44	264	194	1,164	30	180	46	276	—	—	950	5,700
Seiners																										
Ku Peng	90	720	—	—	110	880	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	200	1,600
Pa Teng	2	56	3	84	25	700	8	224	1	28	—	—	—	—	—	—	—	—	—	—	—	—	1	28	40	1,120
Purse Seiner	503	4,024	226	1,808	201	1,608	53	424	135	1,080	80	640	137	1,096	87	696	69	552	68	544	87	696	76	608	1,722	13,776
Trawlers																										
Deep Sea Trawler*	62	1,080	150	3,000	75	1,500	—	—	—	—	—	—	—	—	—	—	86	1,720	—	—	—	—	1	20	374	7,320
Inshore Trawler	269	4,035	102	1,530	2	30	—	—	—	—	—	—	—	—	—	—	74	1,110	—	—	—	—	11	165	458	6,870
Shrimp Trawler	364	2,184	90	540	75	450	33	198	63	378	5	30	—	—	—	—	136	816	—	—	—	—	15	90	781	4,686
Gill Netters																										
Big Tail Junk	32	192	—	—	11	66	245	1,470	—	—	—	—	—	—	—	—	87	522	—	—	—	—	—	—	375	2,250
Hok Lo Teng	17	102	17	102	—	—	—	—	265	1,590	3	18	—	—	10	60	4	24	12	72	105	630	—	—	433	2,598
Fish Collectors	56	448	18	144	8	64	3	24	4	32	—	—	—	—	4	32	16	128	—	—	—	—	2	16	111	888
Miscellaneous	24	144	38	228	9	54	12	72	16	96	32	192	29	174	4	24	114	684	60	360	13	78	—	—	351	2,106
Total	1,850	16,323	992	11,452	717	6,558	480	3,168	776	4,956	157	1,102	183	1,372	150	1,082	842	7,092	234	1,580	266	1,770	109	999	6,756	57,454

* Includes 11 British registered (Steel) trawlers and 19 Japanese-type wooden trawlers, all 30 of which are company-operated.

Appendix 1

TABLE S

HONG KONG MECHANIZED FISHING VESSELS AND CHANGES DURING 1956/57

	Type of Vessel	Total end of March, 1956	Changes		Total end of March, 1957
			Increase	Decrease	
Trawlers	British registered, deep sea trawlers	13	—	2	11
	Primitive & Japanese type deep sea trawlers	19	—	—	19
	Native type deep sea trawlers	53	8	3	58
	Modern type shrimp trawlers	1	—	—	1
	Primitive type shrimp trawlers	119	73	16	176
	Native type inshore trawlers	35	62	2	95
Liners	Native type deep sea long liners	51	8	3	56
	Native type inshore long liners	270	225	16	479
	Native type hand liners	15	28	2	41
Seiners	Native type inshore purse-seiners	281	172	24	429
	Ku Peng Teng	16	—	2	14
	Pa Teng	8	15	—	23
Misc.	Native type inshore gill netters	9	23	—	32
Collectors	Native type fish collectors	78	15	3	90
	Total	968	629	73 *	1,524

* 68 reverted to sail.

TABLE T

DIESEL ENGINES INSTALLED IN FISHING BOATS DURING 1956 / 57

Mark	New Engines (Number)	Old Engines (Number)	Total (Number)	Horse-Power	
				Range	Most popular Rating
(A) *British Manufacture*					
"Gardner"	9	186*	195	24 -156	60
"Petter"	29	12	41	10 - 40	10
"Lister"	21	5	26	3½- 40	21
"Ailsa Craig"	10	4	14	10 - 30	20
"South Iron" (Made in Hong Kong)	5	8	13	20 - 60	20
"Ruston" (Mostly industrial engines)	4	6	10	11 - 34	15
"Kelvin"	3	3	6	22 - 88	33
Others	4	12	16	20 -100	40
	85	236	321		
(B) *Japanese Manufacture*					
"Daiya"	129	7	136	7 - 33	9
"Yanmar"	77	9	86	4 - 16	6
	206	16	222		
(C) *Danish Manufacture*					
"Bukh"	24	—	24	10 - 40	10
"Callesen"	6	—	6	10 - 20	10
	30	—	30		
(D) *German Manufacture*					
"M. W. M."	14	2	16	22 - 44	22
"Guldner"	—	7	7	7 - 30	20
"Bauscher"	1	—	1	6	6
"Kiel"	—	1	1	27	27
	15	10	25		
(E) *American Manufacture*					
"Cummins"	2	—	2	142	142
"Hercules"	—	9	9	20 -150	150
"Gray"	—	2	2	150	150
	2	11	13		
(F) *Swedish Manufacture*					
"Bolinder"	7	1	8	11½- 48	23
"Calmo"	1	—	1	10 - 20	10
	8	1	9		
(G) *Belgian Manufacture*					
"La Meuse"	7	1	8	12	12
(H) *Chinese Manufacture*					
"Hip Tung Wo"	—	1	1	20	20
Grand Total	353	276	629		

* Former lorry and bus engines, converted for marine use.

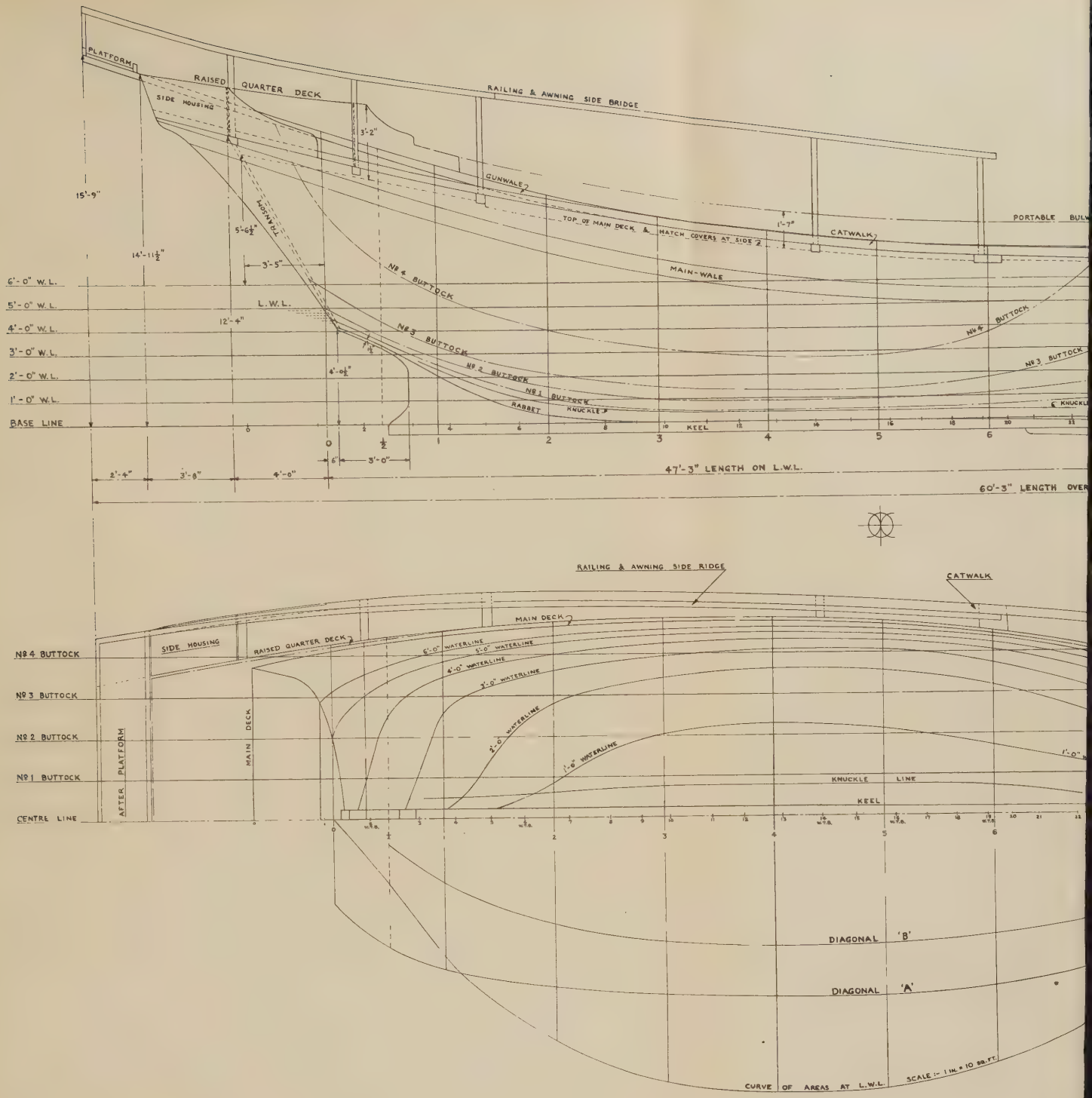
TABLE V

DATA CONCERNING NEW MECHANDIZED FISHING JUNKS REGISTERED DURING THE YEAR 1956/57

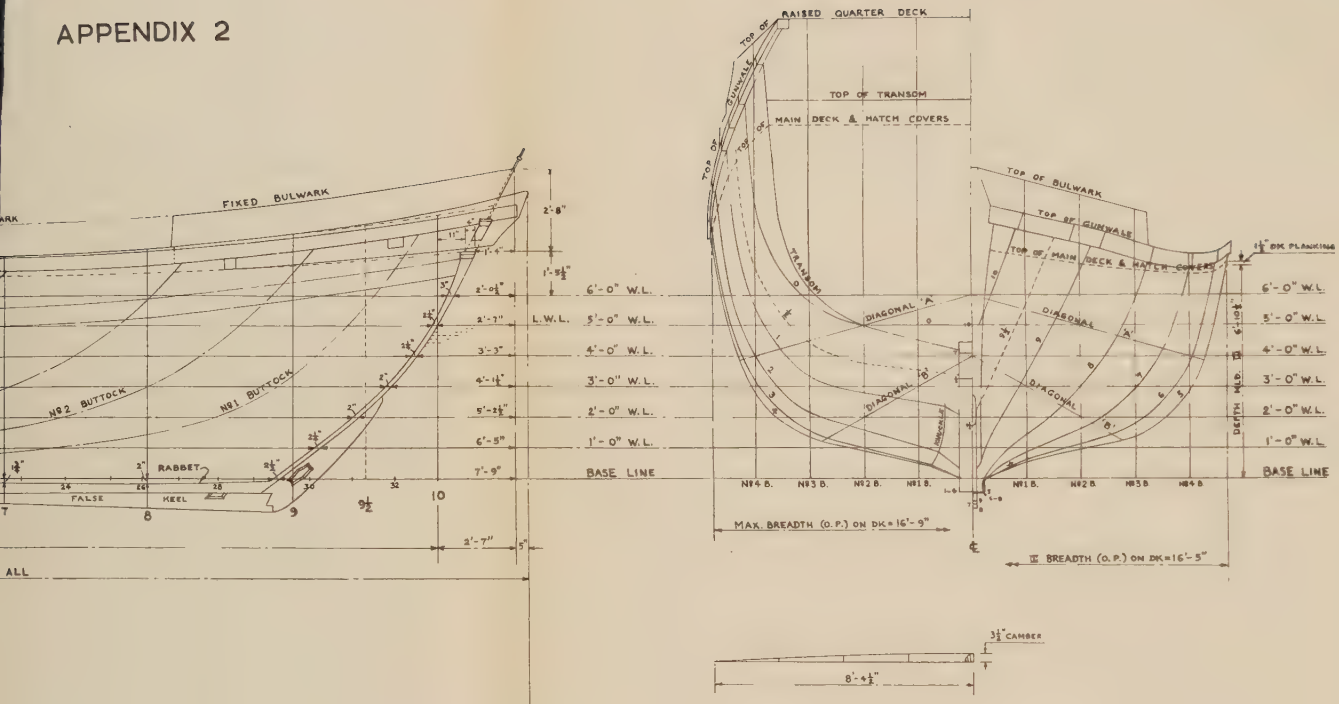
Type of Junk		Deep Sea Trawler (Mod. Type)	Deep Sea Trawler	Inshore Trawler	Shrimp Trawler	Big Long Liner	Medium Long Liner	Small Long Liner	Hand Liner	Pa Teng	Purse Seiner	Gill Netter	Fish Collector
No. of Junk		2	2	29	39	1	19	131	8	3	66	8	10
Reg. Length (L)	Min.	79′–10″	50′ 2″	41′–9″	27′–6″	59′–3″	33′–9″	21′ 1″	24′ 10″	58′–1″	24′–4″	29′–2″	22′–4″
	Max.	79′–10″	75′–10″	59′–6″	61′–2″	59′–3″	49′–4″	45′–9″	44′ 7″	62′ 5″	47′–7″	47′–7″	46′ 0″
	Aver.	79′–10″	63′–0″	48′–2″	44′–6″	59′–3″	42′–3″	29′–3″	32′–0″	60′–4″	33′–0″	34′–4″	38′–4″
Reg. Breadth (B)	Min.	19′–1″	20′–0″	13′–2″	9′ 8″	18′–9″	12′–10″	8′–1″	8′–9″	17′–2″	8′–3″	9′ 6″	8′–3″
	Max.	19′–1″	23′–8″	18′ 7″	17′–6″	18′–9″	19′ 5″	15′–1″	16′ 7″	21′–4″	16′–1″	16′–4″	15′–5″
	Aver.	19′–1″	21′ 10″	15′–5″	14′ 2″	18′–9″	15′ 6″	10′–7″	11′ 9″	19′–1″	12′–5″	11′–10″	12′ 5″
L/B Ratio	Min.	79′–10″ / 19′–1″ = 4.18	50′ 2″ / 20′–0″ = 2.51	45′–6″ / 17′–5″ = 2.61	44′–4″ / 16′ 0″ = 2.77	59′ 3″ / 18′–9″ = 3.16	33′ 9″ / 13′–6″ = 2.50	33′ 3″ / 15′–1″ = 2.21	34′ 9″ / 13′–10″ = 2.51	60′–6″ / 21′–4″ = 2.84	33′ 9″ / 14′–9″ = 2.29	29′ 3″ / 11′ 6″ = 2.54	22′–4″ / 8′–3″ = 2.71
	Max.	79′–10″ / 19′–1″ = 4.18	75′ 10″ / 23′ 8″ = 3.20	48′–5″ / 13′ 4″ = 3.63	55′ 7″ / 12′ 5″ = 4.48	59′–3″ / 18′–9″ = 3.16	43′–8″ / 14′–7″ = 3.00	33′–2″ / 9′ 9″ = 3.40	25′ 9″ / 8′ 9″ = 2.94	58′–1″ / 17′–2″ = 3.38	34′ 9″ / 11′–2″ = 3.11	43′–3″ / 12′ 10″ = 3.37	32′–10″ / 8′–10″ = 3.72
	Aver.	79′–10″ / 19′–1″ = 4.18	63′–0″ / 21′–10″ = 2.89	48′ 2″ / 15′–5″ 3.12	44′–6″ / 14′ 2″ = 3.14	59′–3″ / 18′–9″ = 3.16	42′–3″ / 15′ 6″ = 2.73	29′–3″ / 10′–7″ = 2.76	32′–0″ / 11′–9″ = 2.72	60′–4″ / 19′–1″ = 3.16	33′ 0″ / 12′ 5″ = 2.66	34′ 4″ / 11′–10″ = 2.9	38′ 4″ / 12′–5″ 3.09
Reg. Capacity (Piculs)	Min.	1,991	1,085	443	162	1,305	354	75	124	1,071	98	161	81
	Max.	1,991	2,708	1,338	1,259	1,305	979	569	731	1,595	740	740	630
	Aver.	1,991	1,897	726	582	1,305	596	198	311	1,356	311	310	412
	Total	3,982	3,793	21,054	22,687	1,305	11,327	25,899	2,487	4,069	20,545	2,481	4,119
Main Engine Horse Power	Min.	114	72	50	12	72	30	4	6	72	7	8	4
	Max.	114	114	100	150	72	60	60	50	72	60	60	60
	Aver.	114	93	60	60	72	45	16	19	72	26	26	42
	Total	228	186	1,746	2,352	72	854	2,078	151	216	1,715	211	417
Cost of Wooden Hull	Min.	$160,000	$21,000	$ 4,200	$ 1,650 *	$30,000	$ 4,500	$ 600 †	$ 1,700	$16,000	$ 1,500 †	$ 2,000	$ 1,500
	Max.	160,000	70,000	18,000	14,750	30,000	18,000	8,100	7,800	27,000	8,800	8,000	9,500
	Aver.	160,000	45,500	9,271	7,273	30,000	8,829	3,138	3,737	22,667	4,642	3,612	5,680
	Total	$320,000	$91,000	$268,850	$283,650	$30,000	$167,750	$411,138	$29,900	$68,000	$306,396	$28,900	$56,800
H.P./Capacity Ratio (H.P./Pic.)	Min.	114 / 1991 = 0.057	114 / 2708 = 0.042	60 / 1338 = 0.045	50 / 763 = 0.066	72 / 1305 = 0.055	40 / 908 = 0.044	6 / 175 = 0.034	10 / 372 = 0.027	72 / 1595 = 0.045	7 / 175 = 0.040	8 / 189 = 0.042	4 / 81 = 0.049
	Max.	114 / 1991 = 0.057	72 / 1085 = 0.066	72 / 534 = 0.135	150 / 573 = 0.262	72 / 1305 = 0.055	48 / 354 = 0.136	60 / 397 = 0.151	50 / 648 = 0.077	72 / 1071 = 0.067	48 / 260 = 0.185	48 / 320 = 0.150	60 / 325 = 0.185
	Aver.	114 / 1991 = 0.057	93 / 1897 = 0.049	60 / 726 = 0.083	60 / 582 = 0.103	72 / 1305 = 0.055	45 / 596 = 0.076	16 / 198 = 0.081	19 / 311 = 0.061	72 / 1356 = 0.053	26 / 311 = 0.084	26 / 310 = 0.084	42 / 412 = 0.102
Cost/Capacity Ratio ($/Pic.)	Min.	160,000 / 1991 = 80.4	21,000 / 1085 = 19.4	8,500 / 1142 = 7.4	2,525 / 351 = 7.2*	30,000 / 1305 = 23.0	6,700 / 783 = 8.6	790 / 162 = 4.9*	2,900 / 372 = 7.8	16,000 / 1403 = 11.4	1,500 / 218 = 6.9†	3,800 / 458 = 8.3	6,000 / 590 = 10.2
	Max.	160,000 / 1991 = 80.4	70,000 / 2708 = 25.8	9,250 / 496 = 18.6	7,900 / 366 = 21.6	30,000 / 1305 = 23.0	12,500 / 528 = 23.7	2,300 / 86 = 26.7	2,900 / 162 = 17.9	25,000 / 1071 = 23.3	5,800 / 299 = 19.4	3,200 / 189 = 16.9	7,500 / 325 = 23.1
	Aver.	160,000 / 1991 = 80.4	45,500 / 1897 = 24.0	9,271 / 726 = 12.8	7,273 / 582 = 12.5	30,000 / 1305 = 23.0	8,829 / 596 = 14.8	3,138 / 198 = 15.8	3,737 / 311 = 12.0	22,667 / 1356 = 16.7	4,642 / 311 = 14.9	3,612 / 310 = 11.7	5,680 / 412 = 13.8

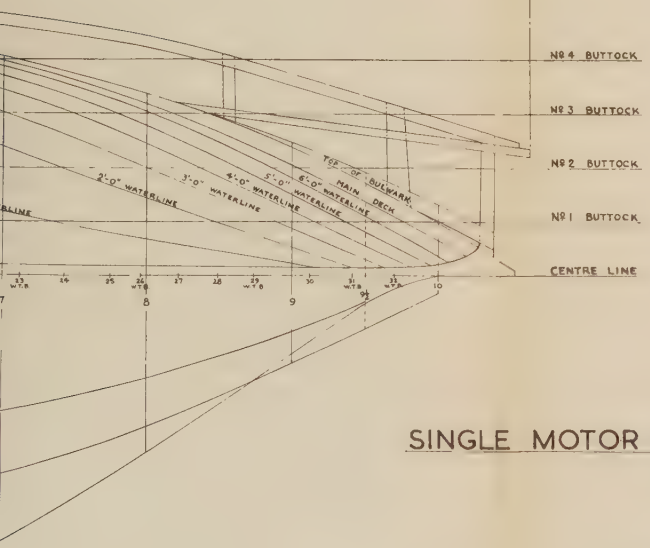
* Made in Macao

† Made in China


PLATFORM
RAISED QUARTER DECK
SIDE HOUSING
RAILING & AWNING SIDE BRIDGE
GUNWALE
TOP OF MAIN DECK & HATCH COVERS AT SIDE
CATWALK
PORTABLE BULK
TRANSOM
MAIN-WALE
15'-9"
14'-11½"
5'-6½"
3'-5"
3'-2"
1'-7"
6'-0" W.L.
5'-0" W.L.
4'-0" W.L.
3'-0" W.L.
2'-0" W.L.
1'-0" W.L.
BASE LINE
L.W.L.
12'-4"
4'-0½"
№ 4 BUTTOCK
№ 3 BUTTOCK
№ 2 BUTTOCK
№ 1 BUTTOCK
RABBET
KNUCKLE
KEEL
2'-4"
3'-0"
4'-0"
6'
3'-0"
47'-3" LENGTH ON L.W.L.
60'-3" LENGTH OVER
RAILING & AWNING SIDE RIDGE
CATWALK
MAIN DECK
SIDE HOUSING
RAISED QUARTER DECK
6'-0" WATERLINE
5'-0" WATERLINE
4'-0" WATERLINE
3'-0" WATERLINE
2'-0" WATERLINE
1'-0" WATERLINE
№ 4 BUTTOCK
№ 3 BUTTOCK
№ 2 BUTTOCK
№ 1 BUTTOCK
CENTRE LINE
AFTER PLATFORM
MAIN DECK
KNUCKLE LINE
KEEL
DIAGONAL 'B'
DIAGONAL 'A'
CURVE OF AREAS AT L.W.L.
SCALE :- 1 IN. = 10 SQ. FT.

APPENDIX 2





PRINCIPAL DIMENSIONS

LENGTH O.A.	60'-3"
LENGTH ON DECK	51'-7"
LENGTH W.L.	47'-3"
MAX BREADTH O.A. (INCL. CATWALK)	19'-5"
MAX. BREADTH (O.P.) ON DECK	16'-9"
BREADTH (O.P.) ON DECK	16'-5"
DEPTH MLD.	6'-10½"
DRAFT MLD.	5'-0"

SINGLE MOTOR WOODEN MULTI-PURPOSE FISHING JUNK

LINES PLAN

FOR

MESSRS. "YUE LEE TAI FISHERIES COMPANY"

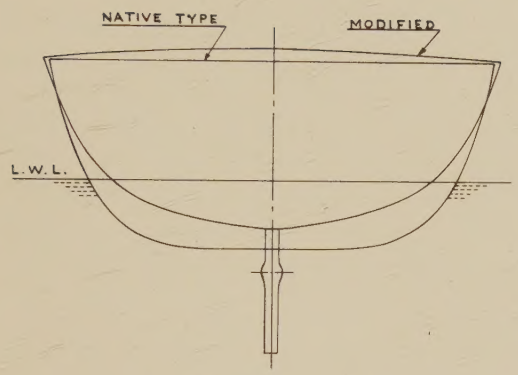
AS LIFTED FROM THE JUNK BUILT IN "SHAU KEE JUNKYARD"

AT APLICHAU, ABERDEEN, HONG KONG.

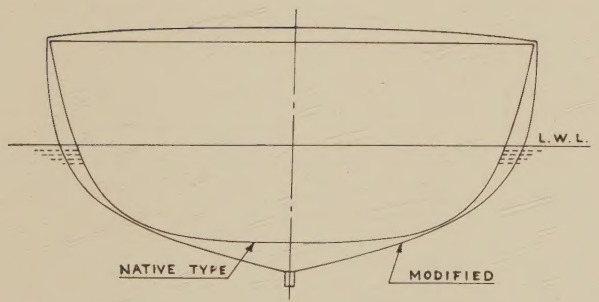
SCALE :- ½ IN. = FOOT

COMPARISON OF HULL FORMS OF TWO PURSI

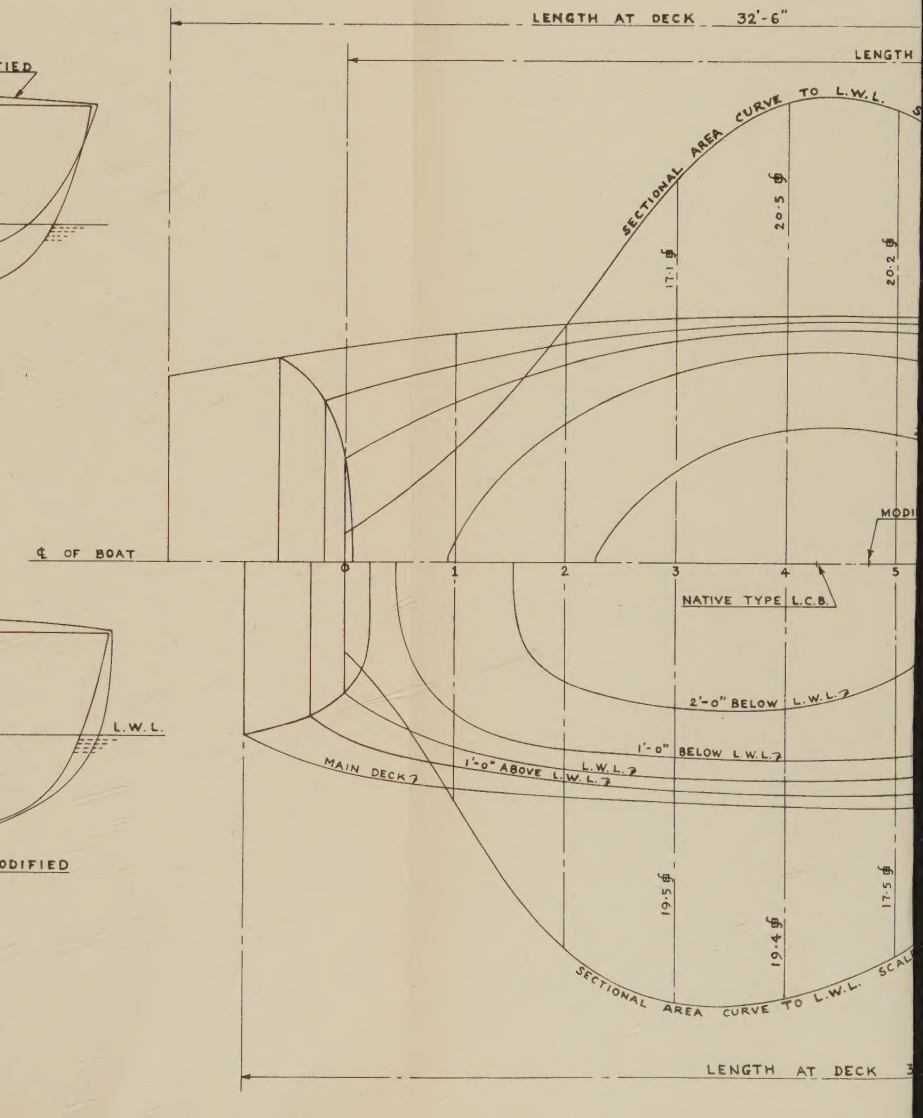
SCALE :- ½ IN = 1 FT



SECTION № 1

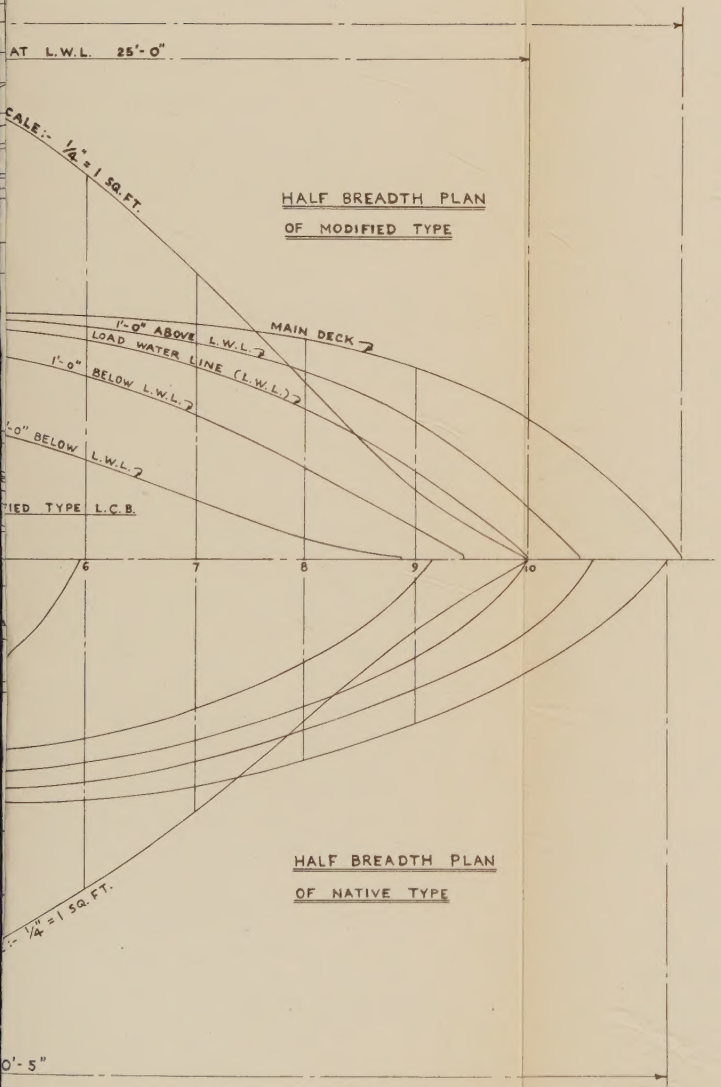


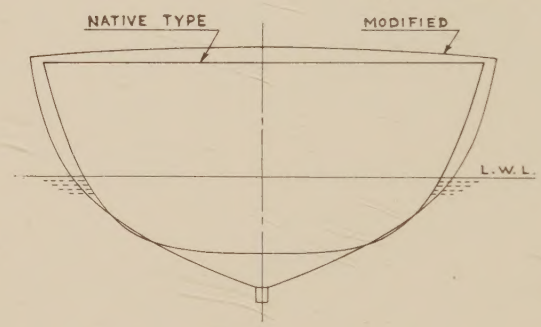
SECTION № 5



E SEINERS

TYPE OF BOAT	LENGTH AT L.W.L.	B.O.P. AT L.W.L.	DEPTH MLD.
MODIFIED	25'-0"	10'-4"	4'-11¾"
TYPICAL NATIVE	25'-0"	9'-9"	4'-6"





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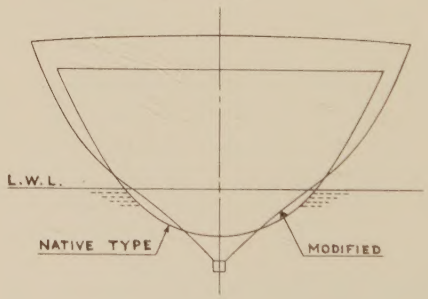

SECTION No 9

Code No.: 3022—57